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THE NEW BUILDING OF THE PHILADELPHIA COLLEGE OF PHARMACY, WITH A BRIEF HISTORY OF THE OLDER BUILDINGS.

An Address delivered by JOSEPH P. REMINGTON, at the Opening Ceremonies, February 22, 1893.

When an American institution has passed the age of activity allotted to man, the three-score years and ten of olden time, and still is full of strength and life; when this institution has proved the wisdom and sagacity of its founders, by exhibiting in its career of seventy-two years a steady growth; and when it can be said that those who have been sent forth under its seal of approval are among the brightest in the profession, it may truly be asserted that it has firmly established its right to exist; and, surely, no impropriety can be attributed to it if, on an occasion like this, a pause is made and sufficient time is taken to make a brief retrospect of what has been accomplished by this organization, which is so well known throughout the world as the Philadelphia College of Pharmacy.

It is especially appropriate that upon this day, on the anniversary of the birth of the Father of our Country, and in this year, which marks the four hundredth in the history of America, we should meet to celebrate the completion of this building, the present home of the first institution founded in the New World for the dissemination of pharmaceutical knowledge. There is also a historical significance in the fact, that this is the seventy-second anniversary of the initial meeting of the body, which ultimately became the Philadelphia College of Pharmacy.

The Philadelphia College of Apothecaries was instituted February 23, 1821, at a general meeting of the apothecaries and druggists of the city and districts. At this meeting it was proposed "that the whole profession should form themselves into a society, for the two-fold purpose of providing a system of instruction in pharmacy, and subjecting themselves to regulation in their business." "This proposition was adopted and a committee was appointed to draft a corresponding project."

"The committee at a subsequent meeting reported the plan of the present College of Pharmacy, which was unanimously agreed upon."

"The College on the adoption of this plan immediately became organized by the election of officers and a board of trustees, who in the same autumn established the School of Pharmacy and appointed lecturers in time to commence the course the ensuing winter."

"At this time (1826), the College included nearly the whole of the druggists and apothecaries of the City and Liberties, who have thus voluntarily placed themselves under a system of regulation, and subjected themselves to punishment on a conviction of improper conduct in their business."

The College in the first few years of its existence was unable to erect a building, but it was compelled to rent a suitable place in which to deliver the lectures. The Hall of the German Society, on Seventh Street above Chestnut, was rented; and here for seven years the lectures were delivered. But in 1829, on May 19th, it became necessary, owing to the German Society needing the rooms occupied by the College, to appoint a Committee to endeavor to secure a permanent situation for the College. The following quotations from the Minutes of the College show clearly and succinctly how the first building devoted to pharmaceutical instruction, erected in America, came into being.

On the 21st of November, 1831, the Committee appointed to select a site for a building reported "that two sites for the purpose can be obtained, one situated on the southwest corner of Marble and Tenth Streets (Marble Street running east and west between Chestnut and Market), containing on Tenth a front of 38 feet, and running in depth 60 feet to a 6-foot wide alley, thus presenting a ront of three sides; the price asked for this site is $8,000. The

whole extent of the lot is 96 feet on Tenth Street, running back 92 feet, the asking price being $20,000." The financial condition of the College at that time is indicated by the following conclusion of the Committee: "As a matter of speculation, it would be preferable to purchase the whole lot, but in the opinion of your Committee it is too heavy a concern to enter into."

"The second lot is situated on the south side of Zane Street, adjoining Six's sugar-house, by which it is bounded on the west; at the east, by a 10-foot wide alley; on the south, by a vacant lot, which is to continue always open, thus presenting three fronts, which is desirable on account of light. The lot is 30 feet on Zane Street, running to a depth of 46 feet."

"The Committee were authorized to offer Abraham Miller $225 per annum for the lot, on ground rent, redeemable in 20 years for the sum of $4,500." The Committee were also authorized to obtain subscribers to a loan at 6 per cent. interest for the purpose of erecting a building on the lot.

On the 13th of December, 1831, Abraham Miller informed the Committee of his acceptance of the above offer for the lot.

On April 23d, 1832, the Building Committee were directed to erect a building on the Zane Street lot, as soon as subscriptions to the amount of $6,000 were obtained.

The Building Committee report on June 24th, 1833: "Subscriptions to the College loan have been obtained to the amount of $6,300; the Committee proceeded at once with the work."

The following description of the old College building, as it appeared in the eyes of the Committee, may be interesting: "The dimensions of the College are 30 feet 9 inches front, by 40 feet in depth, and four stories high. The first and second stories being sufficiently lofty for lecture rooms, with seats rising as they recede from the speaker's desk. In order to admit light over the most elevated seats, the front windows are larger than usual, and handsomely finished with head-pieces of the best white marble, those of the second story being circular tops. The front or main doorway is finished with an elevated white marble entablature, supported by fluted Doric columns of the same material; the eastern side and back part of the building being open and unobstructed. The Committee availed themselves of this important advantage in location by placing windows so as to admit abundant light and free circulation

of air through every part of the building. The College is 57 feet high, and is surmounted by a battlement cornice of considerable width, which gives a commanding appearance; and your Committee have no hesitation in saying that the whole edifice is excelled by few, if any, of equal dimensions in our city, whether in design and beauty of structure, or in its adaptation to the purposes for which it was erected."

For thirty-five years this building was the home of the College; but, at the end of this time, the necessity for a larger building was imperative. The classes had greatly increased (the class of 1867 numbering 154) and the influence of the College was steadily growing. A Committee was appointed to select a new site. They chose a lot which embraced portions of the properties, Nos. 139, 141, 143 North Tenth Street. The corner-stone for the new building was laid on June 24, 1868. On the 7th of October, in the same year, the College building was opened with appropriate ceremonies. This building was unpretentious in design, no attempt being made to secure architectural beauty. It was commodious, conveniently arranged, and it was believed, at the time, by many of the older members of the College, to be far beyond the needs of the classes. Indeed one officer of the College was heard to say, after inspecting the building, "Where are you going to get the students to fill those rooms?" A few years, however, were only needed to prove the wisdom of the committee who planned the rooms, which were so much larger than those in the old building. An addition had to be made but two years afterwards, when the chemical and pharmaceutical laboratories were established.

The Board of Trustees adopted the policy of gradually buying the properties adjoining. In 1874, the properties Nos. 139, 141, 143 North Tenth Street were purchased, which secured to the College the full width of the lots on Tenth Street. In 1880, four properties on Elwyn Street were bought; and, as the laboratories were growing very rapidly, it became necessary, in 1881, to erect a four-story building in the rear on Elwyn Street. The building furnished a chemical laboratory upon the first floor, a pharmaceutical laboratory upon the second floor, a new chemical lecture room upon the third floor, and an alumni room and quiz room upon the fourth floor.

On May 31, 1889, the Aimwell School property was purchased,

and this addition made the total size of the lots required by the College as follows: 70 feet on Tenth Street and 172 feet in depth to Elwyn Street, with the Aimwell School property, which has a frontage on Cherry Street of 54 feet. The necessity of still more room became apparent (the Class of 1890 numbering 577); and, after much careful consideration, a Committee was appointed to draw up plans and specifications for a new building on the front, which would adequately house the increasing collections of the museum and library, and also provide increased accommodations for the growing classes. In 1892, the plans and specifications of the Committee were adopted by the College, and the erection of the new front building, which had been talked about so long, was assured.

In May, 1892, the work began, and it has been continued actively until the present time, February, 1893. The architect selected was Mr. John T. Windrim, the builder being Mr. Allen B. Rorke. The College Building Committee, who were entrusted with the work of superintending the erection of the buildings, were Howard B. French, Chairman; Charles Bullock, Samuel P. Sadtler, James T. Shinn and Joseph P. Remington.

We have assembled this evening to inspect these buildings and a short description may be of assistance to those who are present. The whole College building, if divided into three nearly equal portions, as they run from Tenth to Elwyn Streets, represent the additions which have been made. The middle portion, which includes the remodeled lecture rooms, is the original building, and it was erected in 1868; the rear building, which includes the laboratories, was built in 1881; and the new front building, just finished, completes the structure. It will be seen that about the same length of time elapsed between the erection of the rear building and the front building, twelve years. The new building is six stories high; the front being built of Seneca Red stone and Pompeiian brick; large windows are a prominent feature, affording plenty of light for the rooms. The first floor is arranged to give accommodations for the Library, Actuary's Office and the Board of Trustees' room. The second and third floors, which are embraced in one large room, is used for the Museum and general meeting room. The fourth floor is devoted to providing a room for the Alumni Association and offices for the American Journal of Pharmacy and janitor's quarters.

The fifth floor will be fitted up with seats and desks for an examination room. The sixth floor is used for storage. The basement is furnished with upright ventilated lockers for the use of the students.

Each of the lecture rooms has been remodelled, with folding-chairs and tablet-desks; the seats are arranged in amphitheatre form and they are a great improvement over the old benches. The side yard, which formerly connected the chemical laboratory with the front building, has been converted into an arcade, by enclosing it with a wall and a glass roof. This feature, which is believed to be new, furnishes a large, well-heated and lighted space in which the students may congregate before the lectures.

An additional building to the north of the laboratories provides substantial additions to both chemical and pharmaceutical laboratories; the basement of the new building being used for a boiler room, two large boilers furnish steam for heating the air, and driving a large fan, which sends into each room the proper amount of heated air, being conveyed by a shaft from the roof of the building.

Fire escapes and rapid means of egress from each room, in case of fire, are provided. Every part of the building may be well lighted by daylight, or by both electric light and gas light at night. With these improvements, it is believed that the Philadelphia College of Pharmacy has the best equipment for pharmaceutical instruction that is possible. The additions and improvements have progressed as the necessity for them was made clear.

The following figures, taken from the records, showing the number of students in attendance for the last thirty years, will convey to the minds of all, in the most practical manner, the reasons which influenced the Board of Trustees in deciding to enlarge and improve the accommodations:

Year.	Number of students.	Year.	Number of students.	Year.	Number of students.
1863,	74	1873,	293	1883,	443
1864,	93	1874,	251	1884,	543
1865,	104	1875,	270	1885,	560
1866,	133	1876,	294	1886,	591
1867,	154	1877,	265	1887,	541
1868,	152	1878,	316	1888,	576
1869,	179	1879,	334	1889,	594
1870,	197	1880,	332	1890,	577
1871,	198	1881,	367	1891,	636
1872,	237	1882,	370	1892,	652

It will be seen from these figures that the number of students, at present, is about 650. Of this number, probably one-half are from the immediate vicinity of Philadelphia. The College has become a national institution and nearly every state in the Union has its representatives, with some from South America and a few from Europe. Every year an increasing number of students attend who give their whole time to College work and do not accept positions in drug-stores. A large part of their time is occupied in the laboratories of the College, and nearly all of them have completed their four years of service in a drug-store, gaining a practical knowledge of pharmacy before coming here. The requirement of the College that four years' service in a drug-store, gaining a practical knowledge of pharmacy before being permitted to graduate from the College, is one of those wise provisions of the founders of this institution, which enhances largely the practical value of the diploma. It also furnishes a reason for the retention of the present location of the College. Some of the friends of the institution have questioned the propriety of erecting so valuable a plant just here, at 145 North Tenth Street. But the answer is convincing and leaves no doubt of the soundness of the Board's judgment. Owing to the large number of students, now attending the courses of lectures, who are at service in the neighboring towns and outlying districts, some location convenient to the railroad depots and prominent lines of street cars was necessary. A moment's reflection will show that this building is but five squares from Broad Street Depot, six squares from Ninth and Green Streets Station; about the same distance from the one at Broad and Callowhill; and, nearer to the greatest of all, the new Terminal Depot, which brings a large section of available territory within three squares of the College building. Quite a number of students are also engaged in the cities and towns across the Delaware; and, it must be admitted that in a large city of over one million inhabitants, Tenth Street is not an inconvenient distance from the Ferries. It will thus be seen that the building is about as centrally located to suit the needs of the largest number of those who seek its advantages, as could be selected. The necessities of those who have to come to this building three times, and many of them six times a week, are of paramount importance; an inspection of this building will show that this principle has guided the Committee in the arrangement of every detail. Indeed, it has been with

the view of securing every advantage that could possibly be gained for the students and members of the College, that one of the Committee has toiled so persistently and with such telling effect. Summer and winter, late and early, in health and in sickness, he has ever had in mind the needs of his beloved Alma Mater. You all know to whom I allude, Mr. Howard B. French, the Chairman of the Building Committee; this sketch would be incomplete without this reference to the value of his devoted labors for providing suitable accommodations for the institution, which we all delight to honor, the Philadelphia College of Pharmacy.

Before concluding, there is one consideration which must not be overlooked, and which has an important bearing upon the development of pharmacy in this country. The question which has undoubtedly recurred to the minds of many, who have honored us with their presence this evening, is: "Where has the money come from, to put up these buildings?" Let us begin by asking another question: "Who receives the most benefit ultimately from pharmaceutical education?" In answering the latter question, the reply to the former will be developed. To the latter question the answer is that the *people* of this country derive the utmost benefit from the proper education of the pharmacist. Pharmaceutical education has saved thousands of lives; it has stayed the hand of death an untold number of times; it has not only stood between the physician and patient and guided unerringly the hand of the pharmacist to safety, but it has been the effectual bar between the pharmacist and his poor frail self, with his tendency to err and fail; it has revealed to him the great gulf which yawned below him, into which he was about to plunge his patient, his reputation, aye, himself.

The great educational centres of our country, of which we are all so justly proud, our own University, Harvard, Yale, Johns Hopkins, Princeton, Cornell, and lastly the University of Chicago, are names familiar to all. Scarcely an issue of a daily newspaper can be scanned without seeing a notice of some gift, bequest or endowment to them. Thousands of dollars are yearly pouring into the coffers of these worthy institutions. These have for their object the higher education of the talented youth of our land. For the education of the classes, who have not the means to spend in elaborate training here stands our splendid system of public schools, and an education

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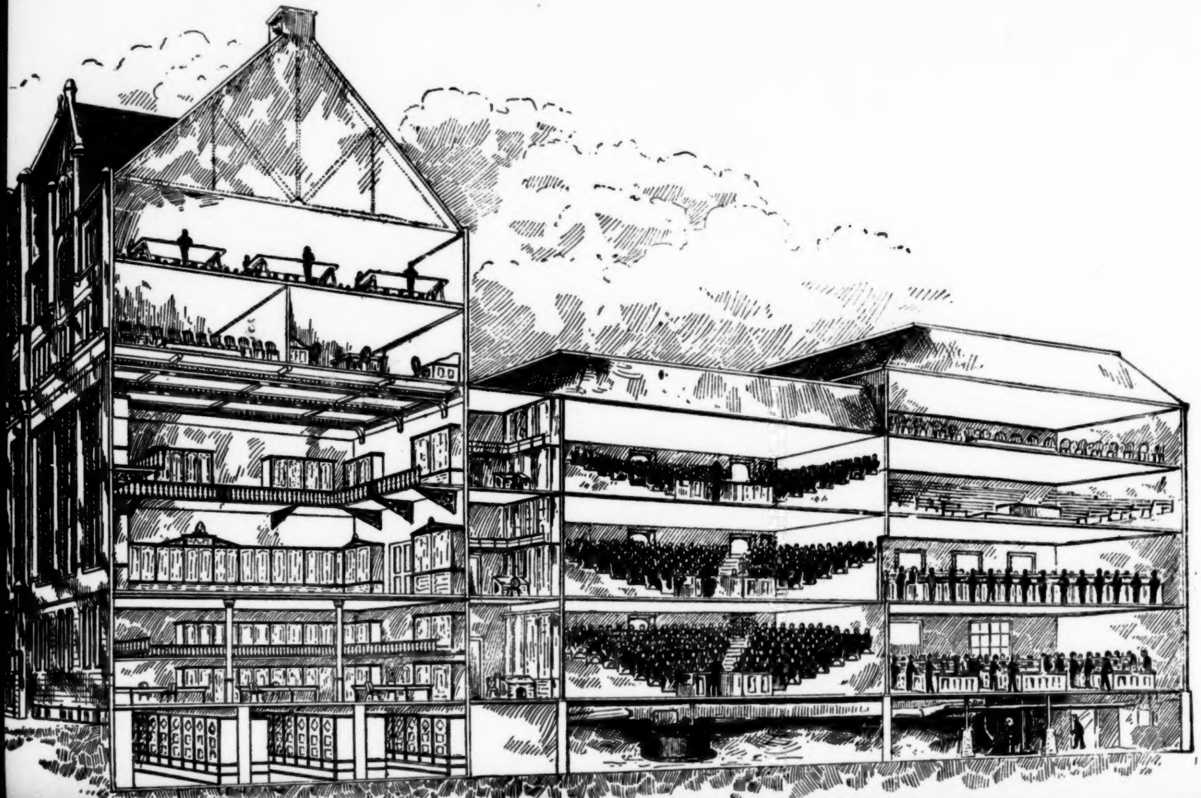

INTERIOR VIEW OF COLLEGE BUILDINGS.

(WITH SOUTHERN WALLS REMOVED.)

Basement.—Students' lockers, Oxyhydrogen gasometers, Boilers, Engine, Sturtevant system of heating.

1st Floor.—Library, Actuary's office, Prof. Sadtler's office, Chemical Lecture Room, Chemical Laboratories.

2d Floor.—Museum and Assembly Hall, Prof. Remington's office, Pharmaceutical Lecture Room, Pharmaceutical Laboratories.

3d Floor.—Museum Balcony, Prof. Maisch's office, Materia Medica Lecture Room, Assistant Professors' Review and Quiz Room.

4th Floor.—Alumni Hall and Meeting Room, American Journal of Pharmacy offices, Janitor's quarters, Microscopical Laboratory.

5th Floor.—Examination Room.

6th Floor.—Storage Rooms.

in the United States is denied to no one. In the case of the Universities, the opulent from their abundance support them; for the public schools, rich and poor alike are taxed for their maintenance; but, when we come to Pharmacy, it will be seen that the highly-favored of this land have entirely overlooked us. Pharmacy has no school tax on which to depend; she has never even applied to the Legislature for an appropriation. The treasury of the Philadelphia College of Pharmacy has been enriched by but one bequest in seventy-two years, that of a small legacy in 1865 for the purchase of books and scientific apparatus. The money which has been spent in this work comes entirely from the "druggists of this country." All honor to them! When the College has needed a new building, there have not been wanting friends of the institution, in the drug trade or in the collateral branches, who have subscribed liberally of their means; and the receipts from the students' fees have paid the debts, until it became necessary to incur the next obligation through the extension of the buildings. The public itself and those not directly interested in the technical work of pharmacy have stood entirely aloof, although no one can deny that the public have received the greatest advantages which flow from higher pharmaceutical education. Pharmacy's educational institutions have had to rely solely on her own votaries. Has not the time come for Pharmacy to make its appeal, to stand up, shoulder to shoulder, with the other Colleges of our land, who are continually asking the public for the necessary sinews of war to carry on the work; and has she not a convincing argument when she points to the fact that 12,700 students have, up to this time, received instruction in these halls—impelled here solely by the desire to improve themselves, and fit them for better service to the public, entirely at their own expense?

If immense sums can be annually applied through gifts, bequests, endowments, appropriations from Legislature, and in other ways for the support of Universities and Colleges, which simply give a general education, will it be impossible to ask that a modest sum be set apart, through these same agencies, to aid in pharmaceutical education, whose importance to the general weal is far greater, for through it flow the issues of health or disease, safety or disaster, life or death?

SOLIDAGO RUGOSA.

By William P. Oberhauser, Ph.G.

Contribution from the Chemical Laboratory of the Philadelphia College of Pharmacy, No. 120.

Very little has been written about the members of this genus, except *Solidago odora* and *S. Virga-aurea*; the leaves of the former were at one time officinal.

Solidago rugosa grows from one to six feet high, is rough and hairy, especially the leafy stem. The plant flowers during August and September.

A quantity of the plant was collected by myself, during the flowering season, and after careful drying it was submitted to analysis, with the following results:

	Per Cent.
Volatile oil,	0·996
Fixed oil,	2·210
Wax,	0·906
Caoutchouc,	1·330
Chlorophyll and resin,	4·244
Mucilage,	1·900
Dextrin,	10·200
Sugar,	0·666
Pectin,	0·640
Calcium oxalate,	0·135
Inulin,	0·960
Pararabin,	1·000
Lignin,	4·690
Incrusting matter,	8·580
Cellulin,	8·230
Undetermined extractive,	9·895
Tannin,	2·700
Moisture,	9·710
Ash,	19·050
Loss,	11·958
Total,	100·000

A careful search for glucosides and alkaloids in the alcoholic and ethereal extracts of the drug failed to reveal evidence of either.

Considerable quantities of the volatile oils of the flowers and of the leaves were obtained separately by distilling these parts of the plant with water. That from the flowers was a colorless oil having a specific gravity of 0·8486 at 15° C. The oil from the leaves was straw-yellow in color and had a specific gravity of 0·8502 at 15° C.

Both had an odor resembling oil of origanum. They gave evidence by their reactions with iodine and bromine of containing large proportions of terpene. On careful heating both oils commenced to boil at 130° C.

DIOSCOREA BATATAS.

BY FREDRICK WM. MEINK.

Contribution from the Chemical Laboratory of the Philadelphia College of Pharmacy, No. 121.

Read before the College at the Pharmaceutical Meeting, February 21.

The plant is indigenous to Central Asia, and belongs to the natural order of Dioscoreaceæ. It possesses tubers of various sizes, of a gray-brown color, and resembling small potatoes in appearance.

The tubers were obtained from Professor Maisch, and by his request subjected to analysis.

Fifty grams of the drug were bruised in a mortar, and then extracted with 100 cc. of 95 per cent. alcohol, by macerating for 24 hours. This alcoholic extract was then drawn off, and 200 cc. of absolute alcohol were added to the drug, in two portions, each being allowed to macerate for 24 hours. These three alcoholic extracts were mixed, the alcohol recovered by distillation, and the extract evaporated almost to dryness, when it was treated with petroleum ether, so as to remove the fat and wax. The former was separated from the wax by digestion with 95 per cent. alcohol, and after the evaporation of the alcohol, the fat was found to melt at 100° C., and to saponify with potassium hydrate. The wax was taken up with hot absolute alcohol, and allowed to crystallize.

The alcoholic extract, after treatment with petroleum ether, was then taken up with 25 cc. of acidulated water, and transferred to a separating funnel, and shaken successively with petroleum ether, chloroform and stronger ether, and these allowed to evaporate and then taken up with acidulated water, and tested for alkaloid and glucoside. Reagents for alkaloids gave no reactions, but the chloroform extract gave the characteristic reaction when treated with Fehling's solution. The solution in the separating funnel was then made alkaline with sodium hydrate, and shaken successively with the solvents mentioned before; the separated liquids being treated in the manner indicated. Reactions for alkaloid were again not obtained, but for glucoside the stronger ether extract gave the characteristic reaction when treated with Fehling's solution.

The original drug was then dried, to remove alcohol, and extracted with 500 cc. of water, in two portions, each macerating for 24 hours. Fifty cubic centimetres of this aqueous extract were evaporated to dryness, weighed and then ignited, so as to obtain the amount of organic matter it contained in solution. To 25 cc. of the aqueous extract, 75 cc. of absolute alcohol were added; the precipitated mucilage was collected, washed, and dried at 100° C., and then weighed.

The filtrate was evaporated to a syrupy consistency, on a water bath, and to this 25 cc. of absolute alcohol were added, and the dextrin was precipitated, washed, dried and weighed.

Another 25 cc. of the aqueous extract were precipitated by plumbic acetate, the filtrate freed from lead by hydrogen sulphide, then divided into two equal parts, of which one was used for the estimation of glucose present, and the other part for the estimation of saccharose by inversion with hydrochloric acid and treatment with Fehling's solution.

The drug was next extracted with 500 cc. of sodium hydrate solution, in two portions. Fifty cubic centimetres of this alkaline liquid were evaporated to dryness, weighed and then ignited to obtain the amount of organic matter. Then 25 cc. of the alkaline liquid were made acid with acetic acid, and to this 75 cc. of 95 per cent. alcohol were added, so as to precipitate the albumen and pectin.

By exhausting the drug with acidulated water, a liquid was obtained in which the total organic matter was determined, also calcium oxalate and pararabin.

On boiling the drug with water, the starch was extracted, and after determining the total amount of organic matter, the liquid was boiled with sulphuric acid, and the starch subsequently estimated as glucose.

The residual drug was dried, weighed, and after treatment with fresh chlorine water, to dissolve the lignin, was again dried, weighed and a portion ignited to obtain the amount of cellulin.

A weighed quantity of fresh drug was dried at 110° C., in an air bath, to constant weight, and the amount of moisture the drug contained was then estimated. The residue was ignited and weighed, which gave the amount of ash the drug contained.

One hundred grams of the drug were all that could be gotten,

so 50 grams of this amount were reserved in order to make special tests for the glucoside. The amount of glucoside extracted from this quantity was very small, so no further experiments could be made, but to prove the presence of the glucoside.

In conclusion, it may be said that the principal constituents of this drug are those usually found in plants, together with a glucoside obtainable by exhausting the drug with alcohol, evaporating the solvent, dissolving the residue in water and agitating with ether, which removes the glucoside.

Results of the analysis of Dioscorea Batatas:

Alcoholic extract,	Glucoside, undetermined amount.		
	Fat,	·38	
	Wax,	·02	
			·40
Aqueous extract,	Mucilage,	·20	
	Dextrin,	·20	
	Saccharose,	·36	
	Glucose,	·72	
	Undetermined organic matter,	2·00	
			3·48
Alkaline aqueous extract,	Pectin and albumen,	3·00	
	Undetermined organic matter,	3·40	
			6·40
Acidulated aqueous extract,	Calcium oxalate and pararabin,	2·00	
	Undetermined organic matter,	2·00	
			4·00
Boiling aqueous extract,	Starch,	1·64	
	Undetermined organic matter,	10·80	
			12·44
Chlorine water,	Lignin,		·12
Residue,	Cellulin,		3·64
Original drug,	Moisture,		61·62
	Ash,		1·62
Total,			93·72
Loss,			6·28
			100·00

ON THE TUBERS OF DIOSCOREA SPECIES.

By John M. Maisch.

In 1886 I received a few axillary tubers, said to belong to *Dioscorea bulbifera;* on being planted in the open air in the following spring, a small plant was raised, which produced neither flowers nor axillary tubers. Since the species named is strictly tropical, and the root of the plant in question was not taken up in the

fall, I was surprised at the appearance of stems and leaves in 1888, and annually since then, proving that the root would survive our winters. During the past summer the plant grew in a sunny position, attained a considerable height, and produced flowers and many axillary tubers, which were subjected to analysis by Mr. Meink. Most of the leaves, particularly on the upper branches, were opposite or in whorls and the plant could therefore not be the one named above, which has the leaves *never* opposite; Mr. Thos. Meehan kindly identified the plant, and confirmed the opinion that it is merely the Chinese yam, Dioscorea glabra, *Roxburgh*, or D. Batatas, *Decaisne*, which was brought to the notice of the French Academy nearly forty years ago as a valuable food plant by Decaisne.

The genus Dioscorea comprises about 150 species, nearly all of them confined to tropical or subtropical countries. A number of these species have large tuberous roots, which on account of the starch present in them are used as food, and are generally known as *yam;* the tubers growing in the axils of the leaves of some species, it appears, may likewise be utilized. But many of these products in their natural state are bitter or acrid, and are known to possess poisonous properties, which, however, are removed by washing with water, or with alkalies, or by boiling or roasting.

Messrs. Heckel and Schlagdenhauffen have recently made a study (*Revue des Sciences natur. appl.*, March, 1892) of the tubers of Dioscorea bulbifera, *Linné*, and ascertained that in the Gaboon country of tropical Africa, the aërial tubers are looked upon as being decidedly poisonous, while in other French colonies they are considered inoffensive. Working with the aërial tubers procured from the Gaboon country, they separated with petroleum benzin some wax and chlorophyll, and then exhausted the residue with alcohol; this extract on being treated with water left some resin behind, while yellow coloring matter, saccahrose and a bitter principle went into solution; this solution injected subcutaneously proved poisonous to frogs and was shown to contain a glucoside. The authors found the underground tubers to be entirely free from this toxic principle.

It is of interest to note the fact that Mr. Meink's investigation has also shown the presence of a glucoside in the aërial tubers of the Chinese yam, and it remains to be determined whether it also possesses poisonous properties. With the exception of the two

species mentioned, these bitter principles do not appear to have been subjected to chemical research; in fact, but very few analyses of yam have been placed on record. The earliest one found by me was published in 1802, in Scherer's Journal on *Dioscorea sativa* by Suersen (I); one in 1852 by Payen on *D. alata* in *Compt. rend.* XXXV (II); one credited to Boussingault, species not mentioned in *Jahresbericht*, 1855 (III); one by Frémy on the tuberous roots of *D. Batatas* in *Compt. rend.* XL (IV); those by Heckel and Schlagdenhauffen mentioned above on the subterraneous (V) and on the aërial (VI) tubers of *D. bulbifera* and finally the present one by Meink on the aërial tubers of *D. Batatas* (VII). For convenience of comparison the results may be tabulated as follows:

	I.	II.	III.	IV.	V.	VI.	VII.
Water,	67·58	77·05	82·6	79·3	69·234	67·445	61·62
Salts,	—	1·90	1·3	1·1	0·3076	1·013	1·62
Cellulose,	6·51	1·45	0·4	1·0	18·4113		
Starch,	22·66	16·76	13·1	16·0	3·6950		
Mucilage,	2·94				—		
Sugar,	0·26	—		1·1	16·9223[1]	31·542	36·76
Fat,	—	0·30	0·2		0·1584		
Resin,	0·05	—	—	—	—		
Albuminoids,	—	2·54	2·4	1·5	1·2750		

The detailed results of (VI) calculated for the anhydrous substance were as follows: Wax and chlorophyll, 0·70; saccharose, yellow color and bitter toxic principle, 3·30; resinous matter, 0·50; albuminoids, 5·31; starch, 52·22; cellulose and lignin, 34·81; fixed salts, 3·16.

ABSTRACTS FROM THE FRENCH JOURNALS.

TRANSLATED FOR THE AMERICAN JOURNAL OF PHARMACY.

Chocolate pastilles.—V. J. Pèquart recommends chocolate in pastilles for exhibiting disagreeable and difficultly administered medicaments, and gives the following procedure, taking calomel as an instance of insoluble medicaments, and santonin of those which are soluble:

(1) Beat the chocolate in a warm mortar and incorporate the calomel, either alone or mixed with aromatized sugar. Excessive heat will cause partial oxidation, blanching the pastilles and alter-

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[1] Includes also glutin-casein.

ing the mass; it is, therefore, best to work at a temperature of about 25° C. If the powder to be incorporated is bulky, it might be of advantage to add cacao butter, in the proportion of two parts of the butter to one of powder.

(2) Medicaments which are very soluble, are preferably incorporated with the chocolate in solution, taking care, of course, to use a vehicle which is not incompatible with the chocolate. Santonin is soluble in five times its weight of chloroform; this will liquefy the chocolate, but will be largely evaporated during the manipulation; however, the pastilles will retain the taste of chloroform for some days.

Another way would be to dissolve the santonin in ten times its weight of cacao butter or in five times its weight of castor oil. In this latter case, however, it would be necessary to add some sugar for maintaining the consistence, and also to mask the taste of the castor oil, which is stronger than that of the chocolate.

For the division of the pastilles M. Péquart uses two tubes, one inserted in the other, the inner one receiving the mass, while the outer one serves as a water-bath. The mass is forced through the tube by means of a piston, and as it emerges is cut by one or more knives fastened to a beam worked by the crank for driving the piston. It is obvious that by properly regulating these parts, pastilles of a uniform weight and containing a definite amount of the medicament may be obtained.—*L'Union pharm.*, Jan., 1893, p. 7.

Chloralose.—This name is proposed by Hanriot and Richet for a body which they obtained from the combination of chloral and glucose, and with which they obtained excellent results as a hypnotic. They are of the opinion that M. Hefter, who had previously mentioned this substance, but who considered it very toxic, did not obtain it in a state of sufficient purity. For its preparation equal quantities of anhydrous chloral and dry glucose are mixed and heated to 100° C. for one hour. Upon cooling treat the thick mass with a little water and then with boiling ether. By removing the ether-soluble portions, adding water and distilling five or six times with water, until all the chloral has been driven off, a residue is obtained, which by successive crystallizations is separated into two bodies; the first of these, slightly soluble in cold water, but soluble in hot water and alcohol, is *chloralose*, and for the second, difficultly soluble even in hot water, which is probably the cause of its inac-

tivity, the name *parachlorose* has been proposed.—*Nouveaux Remèdes*, Jan. 24, 1893, p. 29.

Butylhypnal or *chloral-antipyrine* occurs in the form of colorless, light crystals, more or less bulky according to the degree of concentration of the mother-liquor. The odor recalls that of butylchloral, and the taste is bitter and disagreeable; it is very soluble in hot water, alcohol, ether, benzin, and chloroform. Its solution is colored red by perchloride of iron and yields an abundant precipitate with picric acid. Under the influence of alkalis butylhypnal is decomposed into antipyrine, alkali formiate and propyl-chloroform. It promptly reduces solution of permanganate of potassium when heated, and but slowly in the cold.—*Jour. de Pharm. d'Anvers*, Jan., 1893, p. 16.

Coryl is a new anæsthetic of considerable value in dentistry and minor surgery. It is a mixture of methyl chloride and ethyl chloride. Though it does not produce as great a cold as methyl chloride, it has the advantage of being still liquid at 0°, while the latter boils at — 27° C.—*Jour. de Pharm. d'Anvers*, Jan., 1893, p. 16.

For a local anæsthetic, the venerable Dr. Parsons recommends the following formula: Chloroform, 12; tincture of aconite, 12; tincture of capsicum. 4; tincture of pyrethrum, 2; oil of cloves, 2; camphor, 2. The camphor is first dissolved in the chloroform, and the oil of cloves and the tinctures are then added.—*L'Union pharm.*, Dec., 1892, 549.

Creolin pills.—Creolin is not only used as an external disinfectant but also as an internal remedy in choleriform affections. M. Hofman (*Jour. de Pharm. d'Anvers*, Nov., 1892) recommends the following formula: Creolin, 5 gm., and kaolin, 15 gm.; to be divided into 100 pills, and preserved in talc. This preparation forms a perfect emulsion with water. The pills may be coated with keratin to prevent the evaporation of the creolin; but salol-coating is preferable, as the salol acts as an intestinal disinfectant.

Aristol.—M. Séguier, in the course of an essay on the clinical uses of aristol, gives the following formulas for exhibiting this medicament:

Collodion:—Aristol, 1 gm.; flexible collodion, 9 gm. *Ointment:*—Aristol, 10 gm.; olive oil, 20 gm.; lanolin, 70 gm. *Crayons:*—Aristol, 0·10 to 0·50 gm.; cacao butter, 5 gm.—*Jour. de Pharm. et de Chim.*, Novbr., 1892, 456.

Elimination of iodides which pass in the urine, and especially of potassium iodide, commences two or three minutes after their ingestion. In healthy individuals it is prolonged for at least thirty-six hours after administration in doses of 0·3 to 1 or 2 gm. After large and repeated doses the elimination continues for eleven days or more. The liver contains five times more of the potassium iodide than the blood and muscles, and the urine contains ten times more than the blood.

Quinine sulphate, given in doses of 0·50–1 gm. to healthy persons, is eliminated in about forty-eight hours, the elimination commencing in the first half hour after its ingestion.—M. J. Roux, in *Jour. de Pharm. et de Chim.*, Nov., 1892, 457.

Solution of musk in glycerin for hypodermic injections is easily prepared according to M. Lambotte (*Jour. de Pharm. d'Anvers*) by mixing the alcoholic tincture of musk with half its volume of glycerin, allowing the alcohol to evaporate and then adding sufficient glycerin to make it equal in volume to the tincture first employed.

Subcutaneous injections of sodium phosphate are used by Crocq with good results in nervous affections; he uses a solution of 2 gm. in 100 gm. of cherry laurel water, of which about 3 ccm. are injected under strict antiseptic precautions. He considers it a powerful nerve tonic when used in this manner.—*Gaz. médicale de Liège*, Oct., 1892.

Cupric phosphate is used by Saint-Germain for hypodermic injections in the treatment of tuberculosis. Dr. Luton employed copper-salts for this purpose (see Amer. Jour. Pharm., 1887, p. 559), but the method fell into disuse. The author employs the following formulas:

(1) Crystallized sodium phosphate, 5 gm., distilled water and glycerin, of each, 30 gm.

(2) Copper acetate, 1 gm., distilled water and glycerin, of each, 20 gm.

The two solutions are mixed without filtering the mixture. An injection of this, in its immediate effect, presents analogous action to an injection of Koch's liquid.—*Rev. de Thér.*, Jan., 1893, p. 50.

Alcoholic extract of male fern.—Lanara uses the following in the treatment of eczema with good results: Alcoholic extract of male fern, 30 gm.; alcohol, 15 gm.; extract of myrrh and extract of opium, of each, 4 gm. This is applied twice a day after washing the

affected parts with green soap and removing the scab.—*Vratch*, 1892; *Nouveaux Remèdes*, Jan., 1893, p. 23.

Sulphoricinate of sodium.—A. Berlioz prepares this salt as follows: To one kgm. of castor oil, 250 gm. of pure sulphuric acid of 66° B. are added in small quantities and with constant stirring, to avoid any rise in temperature. Stand aside for 12 hours and add 1,500 gm. cold water; agitate and remove the aqueous layer, which gradually separates. Then to remove excess of sulphuric acid, wash a number of times with water, which contains 100 gm. of table salt per litre, and which has previously been heated to 60–70° C. Carefully add, under constant stirring, soda lye to a feebly acid reaction; let stand for two or three days, decant and filter.

Sulphoricinated phenol, used for the treatment of diphtheria (see Amer. Jour. Pharm, 1891, p. 195) and prepared with sodium sulphoricinate, made in the manner indicated, will retain its transparency at ordinary temperatures.—*Jour. de Pharm.*, Jan., 1893, p. 10.

The action of sulphuric acid on citrene has been studied by G. Bouchardat and J. Lafont (*Jour. Pharm. et Chim.*, Jan., 1893, p. 49), who find that thereby inactive polymers of this hydrocarbon are formed, the most abundant of which is *diterpilene* $C_{20}H_{32}$. The action of sulphuric acid on the camphenes appears to give entirely different results from those which the authors obtained with bivalent citrene, and with monovalent terebenthene.

Ceratonia Siliqua, L.—Ed. Heckel and F. Schlagdenhauffen have established the constituents of *St. John's bread*, following Dragendorff's method of plant analysis:

Petroleum ether extract, wax and fatty bodies,		0·3
Alcohol extract,	Glucose,	13·0
	Saccharose,	26·366
	Fixed salts,	0·262
	Free butyric acid,	0·500
	Wax, tannin and coloring matters,	4·501
Aqueous extract,	Glucose,	4·165
	Saccharose,	5·835
	Fixed salts,	1·500
	Pectin, albuminous matter, gum,	7·75
Incineration,	Fixed salts,	0·675
Difference,	Cellulose,	34·946
Loss,		0·200
		100·000

—*Rép. de Pharm.*, Dec., 1892, 529.

Analysis of the fruit of Gleditschia triacanthos.—Heckel and Schlagdenhauffen obtained the following constituents as a result of their investigations:

Petroleum ether extracted wax,		0·625
Alcohol extracted glucose and saccharose,		37·650
Water extracted	gum, pectin and tannin,	23·993
	salts,	8·409
Incineration of residue gave salts,		0·596
Difference,	albuminous matter,	8·300
	lignin and cellulose,	20·427
		100·000

They have confirmed the observations of former investigators of the absence of alkaloid in the alcoholic extract.—*Rép. de Pharm*, Jan., 1893, p. 1.

GLEANINGS FROM THE GERMAN JOURNALS.

By Frank X. Moerk, Ph.G.

Behavior of red coloring matters.—If a colored solution is to be examined for the identification of the coloring matter, the following test (first devised to detect *aniline red* in *carmine*) will prove serviceable: The solution is mixed with one volume chloroform and three volumes absolute alcohol and thoroughly agitated; two volumes of water are then added (without agitating the mixture), which causes the carmine to separate almost completely between the two layers of the liquids; aniline red in this test is found entirely in the chloroform layer. An examination of a number of vegetable red coloring principles according to this test resulted as follows: *Elderberry*, most of the color remains dissolved, the upper layer having a rose-red, the lower layer a pale yellow, color; the addition of ammonia gives a green color with both layers. *Logwood*, a violet separation, upper layer colored; ammonia colors the upper layer red, the lower layer violet. *Red rose*, the coloring principle is yellowish-red, but separates completely with blue-violet color. *Rhatany-extract*, slight separation of brown color. *Currants*, the color separates almost completely of a rose-red color. *Cochineal*, violet ring, the coloring matter only separating partially. *Red wine*, rose-red ring, after adding ammonia the upper layer becomes dirty-yellow in color. *Raspberry*, rose-red ring after adding ammonia. *Madder*, red separation, chloroform-layer yellow. *Alkanet*, the

coloring principle passes into the chloroform layer and is turned blue by ammonia. *Red Saunders*, the yellowish-red color is imparted to the chloroform, ammonia entirely decolorizing.—De Groot, *Oesterr. Ztschr. f. Pharm.*, 1892, 824.

Sodium peroxide, Na_2O_2, contains 41·02 per cent. oxygen, of which one-half is available as a bleaching agent. The anhydrous oxide is produced when sodium burns in dry air or oxygen; when the monoxide or its hydrate is strongly heated in a current of air; also by the ignition of sodium nitrate. It is not decomposed by strong heat, but boiling the aqueous solution readily effects decomposition. The hydrated peroxide results by adding hydrogen peroxide to a twenty per cent. solution of sodium hydrate and can be precipitated by the addition of alcohol. For the properties of the compound see Am. Journ. Pharm , 1893, 9.—*Südd. Apotheker Ztg.*, 1892, 411.

The determination of hardness in waters by means of standard soap solutions must be carried out at a temperature of 15° C. if reliable results are to be obtained; higher temperatures notably decrease the persistency of the lather even with an excess of soap solution.—Buchner, *Chemiker Ztg.*, 1892, 1954.

Salicyl-acetic acid, $C_6H_4(OC_2H_3O_2)COOH$, an acid for which superior antiseptic properties are claimed, is made by the action of disodium salicylate upon sodium monochloracetate at a temperature of 120° C.; by the decomposition with dilute hydrochloric acid this new acid is separated and freed from sodium chloride by washing with cold water; after drying, cold ether will remove any free salicylic acid and the salicyl-acetic acid is purified by crystallizing from boiling water, forming lustrous laminæ. It melts at 188° C. and is very difficultly soluble in cold water, ether, chloroform and benzol, easily soluble in boiling water and alcohol. The antipyrine salt of this acid (melting point 145° C.) made by the combination of one molecule of each is claimed to have certain advantages over salipyrine because of its stronger antiseptic action.—*Pharm. Centralhalle*, 1893, 41.

Salicylic acid in presence of phenols cannot be colorimetrically estimated in aqueous solutions; in alcoholic solution, however, only the former reacts with ferric chloride. Dr. A. Fagans furnishes the following working method: The liquid to be examined is acidified and extracted with ether; the ethereal solutions are evaporated and

the residue dissolved in 25–30 cc. absolute alcohol placed into a graduated tube of 12–16 mm. diameter; into a similar tube is placed an equal quantity of a 0·02 per cent. solution of salicylic acid in absolute alcohol. To both solutions a 5 per cent. alcoholic ferric chloride solution is added until the maximum intensity of color results; by adding alcohol to one of the tubes until the colors are of the same intensity and then noting the volume of each solution the data are obtained for calculating the salicylic acid. It was found possible to make estimations even if the phenols were present in the proportion of 800 parts to one part salicylic acid.—*Chemiker Ztg.*, 1893, 69.

For the detection of iodine in organic compounds, H. Thoms recommends the addition of concentrated sulphuric acid assisted by heat if necessary; the evolution of violet-colored vapors is very characteristic.—*Pharm. Centralhalle*, 1893, 10.

Iodoso-benzoic acid, $C_6H_4(OI)COOH$, is made by the action of fuming nitric acid upon ortho-iodo-benzoic acid, $C_6H_4I,COOH$; purified by recrystallization from water it forms small, pale yellow laminæ, melting at 209° C. with decomposition. With warm, acidulated potassium iodide solution iodine is liberated and the ortho-iodo-benzoic acid regenerated. Medicinal uses are to be found for this new compound.—*Pharm. Centralhalle*, 1893, 26.

The melting point of cocaine hydrochlorate given as 181·5° C. in a number of standard works of reference is erroneous; Dr. W. Kinzel ascertained that the melting point of the pure salt was 201–202° C. and this was confirmed by other investigators. The low melting point is ascribed to the presence of small quantities of other alkaloidal salts.—*Pharm. Ztg.*, 1893, 25.

The adulteration of saffron with wheat-flour has been shown by Dr. Herz and Professor Hanausek. To decrease the loss occasioned by drying the stigmas are dusted with a fine powder, capable itself of absorbing moisture and coloring matter; mineral powders being so readily detected, flour is used as a substance, cheaply and conveniently obtainable, which is a good absorbent, and, what is more to the point, something that no one looks for. The microsopic examination for flour must be conducted with care, since the strong coloring power of the coloring matter notably interferes with the recognition of the adulteration; the best method for detecting the starch granules consists in suspending the sample in the finest olive

oil.—(Ztschr. f. Nahrungsm.-Unters. Hyg. u. Waarenk.) Pharm. Ztg., 1893, 40.

The alkaloids of Corydalis nobilis Pers. were extracted by treating the powdered root with 96 per cent. alcohol, evaporating and proceeding by Dragendorff's method. The root collected in summer gave 1·95 per cent. total alkaloids; collected in autumn 1·46 per cent., while the herb yielded only 0·12 per cent. Benzol extracts from the acid solution an amorphous white base, which may also be obtained in colorless crystals, and the salts of which have a bitter taste; its composition is $C_{21}H_{21}NO_6$; by oxidation products are obtained resembling in some respects those obtained from hydroberberine, also from a base of *C. cava* (Am. Jour. Pharm., 1890, 396). On rendering the acid solution alkaline, a brown resinous mass is separated, from which benzol extracts a base, crystallizing from boiling water in fine needles, having the formula $C_{22}H_{25}NO_5$. This *corydalnobiline* gives with concentrated nitric acid a blood-red color; inorganic acids form no well-crystallized salts; bitter taste resembling quinine. The alkaline solution obtained as above yields to chloroform several bases, of which four were obtained in crystals and distinguished as α, β, γ and δ alkaloid. Indications of the presence of hydroberberine and berberine were also obtained. The δ alkaloid, berberine and a fluorescent substance were obtained from the herb.—Ernst Birsmann (Dorpat Dissert.), Phar. Post, 1892, 1304.

The activity of male-fern has been ascribed by Poulson to *filicic acid*, which also is the poisonous constituent (Amer. Jour. Phar., 1891, 288 and 487). Prof. R. Kobert now calls attention to the fact that the activity of the male-fern is partly due to volatile oil and that the removal of the fixed oil would also include the removal of the volatile oil. One of the reasons for this statement is that the pure filicic acid given in very large doses without the addition of the oil did not accomplish what a much smaller dose of the acid mixed intimately with the fixed and volatile oils of filix accomplished.—*Pharm. Post*, 1892, 1325.

The microscopic recognition of coriamyrtin, the poisonous glucoside of *Coriaria myrtifolia L.*, succeeds by placing a section or particle of the leaf in an old solution of potassio-mercuric iodide; in a short time the object appears almost black, due to the reaction of the cell contents with the reagent; on now suspending the object in

strong alcohol, the dark compound is dissolved and a green color developed. The addition of a single drop of a strong sodium hydrate solution causes an immediate purple-violet coloration, while from the object separate minute deep-red granules; the color first forms in the outer portion and travels inward. After 10–15 minutes a yellow precipitate remains; the addition of water notably hastens this change. From the behavior towards these reagents it follows that the coriamyrtin is present in all parts of the mesophyll.—Dr. T. F. Hanausek, *Pharm. Post*, 1892, 1333.

Constituents of gutta-percha.—(1) *Gutta*, a white, amorphous hydrocarbon $(C_{10}H_{16})_n$, melting at 53° C., soluble in chloroform, carbon disulphide, fixed and volatile oils and in hydrocarbons altered by light and air, forming a yellow, friable mass partly soluble in alkalies and alcohol and incompletely soluble in the first-mentioned solvents. (2) *Alban*, $C_{40}H_{64}O_2$, melts at 195° C., soluble in hot alcohol (upon cooling separates in small, lustrous scales) and the usual solvents, but insoluble in water and alkalies; heating with alcoholic potassic hydrate solution yields a hydrocarbon *albene*. (3) *Fluavil*, friable, yellow, amorphous $(C_{10}H_{16}O)_n$, melts at 82–85° C.; has the same solubilities as alban. (4) *Guttan*, an unstable compound, in many respects resembling gutta. These constituents obtained from an authentic sample of gutta-percha from Payena Leerii are identical with those obtained from the commercial article. Of the constituents *gutta* is the one showing the characteristic plasticity of gutta-percha; alban does not interfere in the value of the gutta-percha, while the presence of any considerable quantity of fluavil makes its brittle. All of these substances are indifferent to the ordinary chemical reagents; but the alteration of the gutta and guttan by exposure to light and air, also to electrical influences, causes a deterioration of the gutta-percha, although it is not possible to say at present if these decomposition products are related to fluavil and alban.—Otto Oesterle, *Arch. der Pharm.*, 1892, 641.

THE "EARTH SUGAR" ROOT OF THE TAMILS.[1]

By David Hooper.

The sweet roots used in Indian medicine chiefly belong to plants of the natural order Leguminosæ, and consist of *Glycyrrhiza gla-*

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[1] Phar Jour. and Trans., Jan. 7, 1893, p. 548.

bra, *Abrus precatorius*, *Taberniera nummularia* and *Alysicarpus longifolius*. The first of these is the well-known liquorice, and the remainder are called wild liquorice and are used as substitutes for the true kind. Besides these, in Southern India, a drug described in native works of great antiquity and sold in the bazars, is the *Poomichacarei kalung*, derived from *poomi*, the earth, *chacarei*, sugar, and *kalung*, root. The botanical origin of this root has only recently been discovered through the industry of Dr. P. S. Mootoosawmy, of Tanjore, who sent a botanical specimen of the plant yielding the drug to Mr. M. A. Lawson, who identified it as *Mærua arenaria*, a plant belonging to the natural order Capparideæ. The "earth sugar" root is mentioned in a very old work of the Tamil medical writers, called Pædatasintharmini, written in the usual poetical manner by Karsimrouther centuries ago. He says it "cures skin eruptions, all venereal affections, fever, piles and strenghtens the human system." Dr. Ainslie, who wrote nearly seventy years ago, and to whom we are indebted for bringing so much light upon the drugs of the Hindus, describes, in his "Materia Indica," II, p. 330: "This root, in external appearance, is not unlike liquorice root; it also somewhat resembles it in taste, but is not nearly so sweet; it is prescribed, in decoction, as an alterative and diet drink. I have not been able to ascertain from what plant it is procured, but hope that future research may be more fortunate. What I saw of the *poomichacarei kalung* was brought to me from the medicine bazar of Trichinopoly, and was said to have been gathered in the woods of Malabar."

As above stated, the botanical origin of this drug has only recently been discovered. Dr. P. S. Mootoosawmy, of Tanjore, sent a flowering and fruiting specimen of the plant yielding the drug to Mr. M. A. Lawson, of his station, and it was identified as *Mærua arenaria*, H. F. and T., belonging to the natural order Capparideæ. The plant was found rather abundant near Tanjore, but its habitat is described as being in the most unfrequented and inaccessible woody parts of the Circar Mountains, flowering during the cold season. The "Flora of British India" says it is found in the West Himalaya and in Central India.

Roxburgh describes this plant under the name of *Capparis heteroclita*, R. It is a large unarmed climbing shrub; leaves elliptic, corymbs terminal, calyx four-cleft; corolla regular, four-petalled;

stamina on the receptacle, which is as long as the tube of the calyx. The most remarkable part of the plant is the fruit; this is a beaked berry two to five inches long, deeply constructed between the seeds, fleshy, elongate, moniliform, one or more seeded. There is only one seed in each single berry or lobe of the compound fruit. Roxburgh further remarks that the Telugu name is *Putta-tiga*, and that the unripe fruits are boiled and eaten by the natives.

The roots are plump when fresh, from 1 to 1½ inch in diameter, long, cylindrical, contorted, with a light brown surface. When dried they become darker in color and wrinkled longitudinally, and several irregularly disposed transverse markings of a lighter color are observed on the surface. The transverse section of the root exhibits a central hard woody centre of a yellowish color, and several similar but smaller woody bundles are scattered throughout the waxy looking parenchyma of the cortical portion. In the bazars the drug is sold in circular discs, like calumba root, having been sliced transversely when in a fresh state and allowed to dry in the sun The taste is sweet and mawkish, and there is no distinctive odor as there is in liquorice root.

Earth-sugar root is used by Mahomedans and Hindus as a sexual stimulant and tonic, antisyphilitic and alterative. It can be used either in a fresh or dried state. The outer brown covering is supposed to be harmful, and is removed previous to use. The way in which this and other roots are purified before they are taken as medicines, is rather peculiar. It consists in putting a sér of cow's milk diluted with an equal quantity of water into a vessel, and covering its mouth with a clean cloth, which is then tied round the neck. The bruised root is laid on the cloth and covered by another inverted vessel. The milk is then boiled and the vapor is supposed to purify the root, which is afterwards dried, finely powdered and kept ready for use.

I requested Dr. Mootoosawmy to make some definite trials of the drug on his patients, but he has not been able to do this to any great extent. He gave the root in a powdered state, in drachm doses, mixed with sugar candy for gonorrhœa and syphilitic complaints, and also administered a decoction of the root. He recommended a mixture of the root, prepared with mutton broth, for patients suffering from chronic diarrhœa and dysentery, a prescription used by native physicians. From an analysis of the drug,

I am, however, inclined to the opinion that it possesses very little, if any, medicinal action, and that if any benefit resulted from the use of the above prescription, it would more likely be due to the mutton broth than the root of *Mœrua arenaria*.

Sections of the root examined by the microscope exhibited no starch or crystalline matters in the cells, but yellow, granular matter and oil globules were present. The central woody column and woody bundles in the cortical portion were made up of large lignified cells.

The finely powdered root lost 11·26 per cent. of moisture, and left 6·6 per cent. of mineral matter when ignited. The ether extract amounted to 4·22 per cent., and consisted of fatty acids of a brownish color and fluid consistence. After standing a few days, white crystals formed, which were collected and pressed between folds of blotting paper, and recrystallized from boiling alcohol. This insoluble portion had the properties and melting point (62° C.) of palmatic acid. Oleic acid was present in the fluid portion of the extract.

The alcoholic extract contained a large quantity of saccharine matter, which reduced Fehling's solution to a very slight extent. A small quantity of an organic acid was removed from solution by plumbic acetate, but no substance similar to glycyrrhiz could be detected. The absence of an alkaloidal principle was proved after the application of the usual reagents.

The aqueous extract contained an additional quantity of sugar, and when heated to the boiling point threw out an abundance of white flocks of albumin. A large quantity of the root was exhausted directly with water, and the extract heated to separate the insoluble albumin, and filtered. The syrup was then boiled in an inverted condenser with 1 per cent. sulphuric acid for three hours. The sulphuric acid was removed with barium hydrate solution, and the syrup, estimated with Fehling's test, indicated the presence of 41·2 per cent. of invert sugar. This sugar showed no disposition to crystallize, and when examined in a Laurent's polarimeter, it had no action on polarized light.

Asafetida has been successfully administered in Italy in threatened abortion (*Centralbl. f. Gynäk.*, 1892, No. 9). Dr. Turazza followed Negri's treatment, giving in the beginning of pregnancy, asafetida 0·1 gm. twice daily gradually increasing the dose to ten pills, and then slowly reducing it till confinement.

THE MANUFACTURE OF PEPSIN AND DETERMINATION OF ITS PROTEOLYTIC POWER.[1]

Pepsin, the active principle of the gastric secretion, is an albuminous principle secreted by glands imbedded in the tissue of the inner coating of the stomach; it is a colloid, differing from ordinary albumin in its behavior with nitric acid, not giving the yellow xanthoproteic reaction, and is soluble in water and glycerin. When in solution it is destroyed by boiling, by strong alcohol, by alkalies, and by most metallic compounds. Pepsin acts on nitrogenous matters only when in slightly acid solutions. At present it is almost exclusively prepared from pigs' stomachs, the digestive secretions of the sheep, calf and ox being less active. Various processes of making pepsin have been and are still followed; none of them yields an absolutely pure product, though the digestive power of some kinds of pepsin is very high indeed. Ten years ago an article, possessing a digestive power of fifty times its weight, was considered very good, but now it is expected that 1 grain of pepsin should, under certain conditions, digest 2,000 grains of hard-boiled white of egg.

Commercial pepsin was first prepared by cutting up pigs' stomachs into small pieces, macerating these in slightly acidulated water, filtering the solution, and evaporating it at a low temperature to dryness. Next, it was thought to improve the process by taking the filtered pepsin solution and precipitating it by means of basic acetate of lead, decomposing the precipitate by sulphuretted hydrogen, and evaporating the filtrate, either by itself, or with the addition of sugar of milk. These processes were naturally tedious, the pepsin so prepared had almost always a putrid odor, it was liable to contain lead and other impurities, and it possessed very little digestive power.

Beal's Process.—Dr. Lionel Beal suggested taking the inner coat of the fresh pig's stomach, and after well washing and cleansing it, to scrape it with a blunt knife, and dry the viscid fluid so obtained on glass plates; to afterwards treat it with benzol, ether or chloroform, to extract fat, again dry it and reduce to fine powder. This process is accepted and published in the British Pharmacopœia. The pepsin so prepared is described as *sparingly* soluble in water; but since the active principle of pepsin itself is soluble, that does not

[1] Pharmaceutical Journal and Transactions, January 21, 1893, p. 588.

speak well for the purity of the article; in fact, the principal constituents of it are mucus and epidermal tissue, as might be expected from the mode of preparation.

Bearing in mind that the peptic glands are imbedded in the inner coating of the stomach, and that the Pharmacopœia admits a great deal of impurity or insoluble matter, manufacturers were led to take the inner coatings of the pig's stomach, stripped from the less active outer fleshy portion, wash, dry and powder them. Thus was prepared, in a very simple and easy manner, a kind of pepsin, corresponding to the Pharmacopœia requirements, and found to possess very great strength. This process has been much improved and perfected; it is now extensively carried out by some houses in America and the product sold in the market as insoluble pepsin. The fresh pigs' stomachs are cleaned and the inner coatings stripped off; these coatings or skins are then trimmed from all adhering fat, again thoroughly washed and scrubbed in cold water, and when perfectly clean and free from mucus and blood, they are packed in barrels filled with cold water, with lumps of ice on top, and left to stand overnight, to still further remove any blood or impurities. Next morning they are again washed and scrubbed. Thus washed until free from mucus and blood, they appear quite white and clean. The membranes are then spread out on linen sheeting extended over frames, care being taken to prevent overlapping, and are quickly dried at a low temperature, in a properly arranged drying room. They dry to horny semi-transparent sheets which, when coarsely powdered, are treated with benzol, ether or chloroform, to remove fat, then dried again and reduced to a very fine powder. It is not advisable to carry the powdering too far, but best to collect only the first few siftings, and to leave an appreciable amount of residue. The first siftings possess the greatest digestive power, the powder obtained afterwards being less active and containing most of the inert epidermal tissue. The siftings have therefore to be tested from time to time, and pulverization stopped as soon as the powder becomes deficient in strength. It is an important fact that notwithstanding the long and repeated washings of the coatings of the stomach, the pepsin ultimately obtained by this process is of great strength, 1 grain dissolving readily about 2,000 grains of finely divided coagulated albumin. There can be no doubt that during the washing all the ready formed pepsin must have been removed,

but the peptic glands produce fresh peptic secretion, which is retained and dried in the skins. It would seem that the peptic ferment, when reduced to powder in the very glands where it has been generated, retains, in a very high degree, its active digestive power, so that when mixed with warm acidulated water and albumin, it proves equal, if not superior, to any pepsin made by a more complicated and more scientific process.

Scheffer's Process.—Scheffer availed himself of the fact that albuminous matter is thrown out of solution by the addition of salt in sufficient quantity to form a nearly concentrated solution of pepsin. In following this plan, it is found that ordinary albuminous matter is far more easily precipitated by salt than pure pepsin, in fact it appears that pure pepsin in solution, when treated with salt, is not fully precipitated, but floats about in the salt solution without either rising or falling. When ordinary albuminous matter is present, however, it carries the pepsin mechanically with it to the surface.

In making pepsin by Scheffer's process, the inner coatings of the fresh pig's stomach, which contain the greater portion of the peptic secretion, are stripped off from the outer fleshy portions. Immediately after killing, and while the stomachs are still warm, this can be easily effected. After being well washed, both the inner and the outer coatings are separately passed through a mincing machine, and each is separately macerated in cold water acidulated with hydrochloric acid. In operating upon 200 stomachs, the inner coatings weighed about 103 pounds when mixed, and occupied a bulk of about 10 gallons; the outer coatings, when treated in like manner, weighed and measured a little more. Each of these portions was put in a 70-gallon cask, which was filled with cold water, to which 32 ounces of strong hydrochloric acid had been added. These two masses were from time to time well stirred; and allowed to stand over night. Next morning, after another good stirring, they were strained separately through canvas bags about 3 feet 4 inches long, tapering down to a bottom about 5 inches square, the top circumference of the bag being about 4½ feet. One bag like this will hold and drain the 200 minced stomachs. After allowing the liquors to drain off, it is advisable to make a preliminary test, to ascertain their behavior with salt. The liquor from the inner coatings strains more readily than that from the fleshy portions, and there is more of it. Should the solutions appear milky, and strain and filter badly,

sulphurous acid may be added, with a little talc, and after being allowed to deposit and clarify, they may be strained again. The liquors from the fleshy portions, when saturated with salt, give a dense flocculent precipitate, which rises readily, leaving the fluid below perfectly clear; such a precipitate drains, presses and dries well, but its digestive power is weak. When the liquors from the inner coatings are similarly saturated with salt, the precipitate appears watery, remains floating about in the fluid, and will either pass through the straining cloth, or block the pores, and not strain or drain at all. Separation of the precipitate by pressing offers great difficulties, but the small quantity so obtained, when dried and powdered, will possess great digestive power. By mixing the two liquors, or by adding just enough liquor from the fleshy portions to the liquor from the inner portions, it is possible to obtain a mixture from which, on addition of salt, pepsin may be precipitated in a condition in which it rises to the surface, drains, presses, and dries well when powdered, whilst it will prove of very good quality and digestive strength.

When it has been ascertained how much of the one liquor is to be added to the other, the mixture is made in a clean 70-gallon cask, filled to about five-sixths, and then the salt is added. It is best to add more salt than the liquor will dissolve, usually enough to nearly fill the cask to the top. The salt has to be added quickly and at once, and the stirring has to be kept up just long enough to dissolve the salt; as soon as the pepsin begins to rise in thick flakes, the stirring is to be discontinued, and the precipitate allowed to collect at the surface. The larger the flakes the better, and the more convenient for straining, pressing, etc. Unnecessary stirring will only break them into fine particles, and make the subsequent treatment of the precipitate difficult. When the pepsin begins to rise in the desired manner, the mixture is allowed to stand undisturbed till next morning, when the pepsin is removed, and transferred to a strong straining cloth, 2½ feet square. Here it is allowed to drain for one day, and the draining assisted by occasionally passing a large spatula between the moist precipitate and the cloth. The following morning the drained mass is folded in a double cloth and well pressed. The pressure has to be increased gradually, the pressed mass being taken out of the press once or twice and crumbled up by hand, then pressed again; the drier it gets the more

the pressure may be increased. Should the mass be too salt, it may be mixed with an equal quantity of a mixture of 2 parts of water and 1 part alcohol, allowed to stand for some time, drained and pressed as before. After being pressed as dry as possible, the pepsin is taken out of the cloth, crumbled up, placed in shallow trays, and dried at a temperature of not higher than 100° F. When dry, it is coarsely powdered, treated with benzol, ether or chloroform, to remove fat, again dried, and reduced to the finest powder possible.

It sometimes happens that after taking all the precautions described the pepsin does not rise well, and most of it remains in solution. By allowing such a liquor to stand longer, or by adding a fresh portion of stomach liquor and more salt, the whole of the pepsin may be recovered in good condition. It is seldom necessary to throw a liquor away after removing the pepsin, but by allowing it to stand till it has become perfectly clear, the supernatant brine may be syphoned off, and the flocculent sediment collected.

Scale and Crystal Pepsins.—Besides these powdered pepsins more elegant preparations known as scale and crystal pepsins are in the market, some of these being of very good quality and strength. These preparations are made entirely from the inner coatings of the pigs' stomachs. In an operation with the inner coatings of 125 stomachs, weighing about 65 pounds, they were washed and soaked well in cold water, to remove mucus, blood and other impurities, freed from adhering fat, and then passed through a mincing machine. The minced mass was placed in a digester with 80 pounds of distilled water and 16 ounces of strong hydrochloric acid, and the whole digested at about 100° F. The mixture was stirred all the while, care being taken not to let the temperature rise above 112° F., and the digestion continued till the particles of stomach were dissolved. About six hours are requisite to effect complete solution. The pieces of minced stomach swell up at first, and form a slimy grayish-white coherent mixture. This sliminess increases till the whole is converted into a uniform transparent glairy magma. By continuing the digestion and stirring, the mass loses its homogeneity, breaks up, becomes thinner, and fine red particles separate. When this condition is attained digestion is stopped, and the solution allowed to cool and deposit; before leaving it to settle, it is advisable to add 2 ounces of chloroform, and some sulphurous acid to the mixture. It is then left to stand undisturbed overnight. The amount of

peptone increases with the length of time during which digestion is carried on, and also with an increase of temperature during the operation. Next morning any dust or film on the surface is carefully removed, and the clear yellowish green solution removed and strained; if not perfectly clear, digestion has not been perfect, the temperature having been either too high or too low, and the liquid cannot be used for scaling. When clear and successful, the above quantities should yield from 95 pounds to 100 pounds of perfectly clear liquid, of the consistence of thin syrup, and should leave about 25 pounds of sediment. The clear solution is either evaporated *in vacuo*, or placed in shallow trays, and further evaporated to about 30 pounds of syrupy fluid, at a temperature not higher than 112° F. When thus concentrated, it is again strained, spread upon glass plates, and scaled in a proper scaling room. The concentrated pepsin solution keeps tolerably well for about two days, but it is best to add about one ounce of chloroform to each gallon of fluid. An experienced scaler, with a good scaling room, can get from 5 pounds to 6 pounds of good scales from the above quantity.

The so-called crystal pepsin, or peptone pepsin, is prepared in exactly the same way as the scales, except that instead of thin scales being formed, the concentrated pepsin solution is dried in thicker sheets, like fine glue, and broken up when dry into small pieces. The words crystal and peptone, applied to this class of preparations, are both inappropriate, since they are neither crystalline nor true peptones, but rather mixtures of pepsin and syntonin, with a little peptone. The pepsin is not improved by these additions; they are, in fact, mere unavoidable impurities, without which the pepsin would be of greater strength. Hitherto it has been impossible to produce an entirely pure pepsin. The scraped stomachs contain a large amount of mucus and skin tissue, the powdered inner coatings also contain, besides traces of mucus, a large amount of skin tissue. The pepsin prepared by Scheffer's method contains salt and inert albuminous matter, while the scale and crystal pepsins contain mucus, syntonin and peptone.

Purification of Pepsins.—For purifying the pepsins made by precipitation with salt, or by dissolving the inner skins of the stomachs and scaling the concentrated solutions, various suggestions have been made from time to time, with a view to reduce the amount of unavoidable impurities. Sulphate of soda has been proposed as a

precipitant instead of salt, and sulphurous acid has been added during the processes of manufacture, to prevent decomposition and give the operator longer time for effecting perfect clarification of the solution, by allowing every particle of undissolved stomach and suspended mucus to deposit. The sulphurous acid destroys much of the usual animal smell always present in pepsin solutions, and yields an almost odorless product.

The sulphate of soda is added to the acidulated pepsin solution, as described in Scheffer's process, at a temperature of about 94° F., when saturated sulphurous acid is added, so as to give the mixture a faint sulphurous acid odor; it is then kept at this temperature till the pepsin separates, care being taken to have sulphurous acid always present to prevent decomposition. After the pepsin has been removed the sulphate of soda mixture is allowed to cool, when a large amount of sulphate of soda will crystallize out, and may be recovered and used again. The pepsin thus prepared is tolerably free from peptones, which remain in the sulphate of soda solution, and when drained and pressed it yields a tolerably pure and active pepsin. Any sulphate of soda present may be removed by redissolving the pressed pepsin in water acidulated with hydrochloric acid, adding sulphurous acid, and dialyzing the mixture in the usual way. Pepsin dialyzes very sparingly, while peptones, sulphate of soda, common salt, syntonin, etc., dialyze much more readily in acid solutions. When sufficient sulphate of soda has been removed, the undialyzed portion is evaporated *in vacuo*, either to dryness and powdered, or sufficiently concentrated to be scaled on glass plates. The scales of this pepsin are somewhat opaque, and have a slight bitter taste, reminding one more of sodium sulphate than of pepsin.

Patents for Pepsin Manufacture.—Some of the above-mentioned improvements in the manufacture of pepsin have been the subject of patents. C. Jensen took out a patent for making what he called crystal peptone pepsin. He describes more minutely, and lays particular stress upon, the production of the peptone, the impurity, than the pepsin itself. J. LeRoy Webber patented the use of sodium sulphate as a precipitant and of sulphurous acid to aid in clarifying and dialyzing the impure pepsin solution; while J. B. Russell patented the dialyzing process in general for the removal of peptones, soluble salts and other impurities. Some of the advantages claimed

by these patents are doubtful, while some of the processes were in use in one form or another long before the patents were filed.

Characteristics of Good Pepsins.—All good pepsins should be of a light color; the scales a light lemon, slightly greenish and nearly transparent; the powder white, or nearly so. They should be soluble in water, with a characteristic, but not offensive or putrescent smell, nor should they be very hygroscopic. Deficiency in any of these respects is usually due to faulty manufacture, or to the presence of mucus, albumin, peptone or inert animal tissue. The digestive power of good pepsin should be near 2,000 times its own weight.

Tests for Pepsins.—The different official tests for ascertaining the digestive strength of pepsin are perhaps sufficient to ascertain if a sample is above, below, or of, the required standard; but they do not give the actual strength. There is no recognized test which under all circumstances will give uniform, impartial results, and slight variations in the manipulation will frequently occasion widely different results with the same pepsin. It must also be borne in mind that the real digestive power of a pepsin is measured by the amount of peptone which it is able to produce in a given time, under certain conditions; while, at present, it is usual to be satisfied with ascertaining the amount of albumin dissolved. The first step in the digestive action of pepsin on coagulated albumin, is the conversion of the latter into soluble acid albumin, or syntonin; from which state it is subsequently converted into parapeptone and then into peptone proper. A weak pepsin may dissolve all the albumin and convert it simply into syntonin, but fail to carry the digestion further and may not produce peptone, whilst a much stronger pepsin may, in the same time, convert the albumin not only into syntonin, but also into peptone. So far as appearance goes, both samples would appear to have done equal work, the albumin being dissolved in both instances; while, in reality, the one is double the strength of the other. It must also be remembered that in testing a sample of pepsin, the results are materially influenced by various conditions. Pepsin, if allowed to act on more albumin than it can digest, will convert the albumin principally into syntonin and produce very little, or no peptone at all. Being undialyzable also, it cannot penetrate the albumin, and exerts its dissolving power only on the outer surface of it; it is therefore evident that the more finely divided the albumin is, the greater will be its outer surface and the more readily

will it be acted on and dissolved. Syntonin and peptone are also more soluble in weak solutions; 100 grains of albumin require about 1 ounce of acidulated water for solution; if less water is used, the solution is retarded.

The activity of different pepsins varies, and as it is difficult to estimate the undissolved portion of albumin, which after four hours of digestion is always in a more or less advanced state of digestion, it is best to regulate the amount of albumin in such a manner that after the termination of the experiment it is, as nearly as possible, completely dissolved. To effect this, one or two preliminary tests will be required before beginning the ultimate experiment. In fact, those who have from time to time to examine samples of pepsin and desire to get uniform results, will find it requisite to see that their experiments are each time carried on under precisely the same conditions, and to pay attention to the following points: The eggs used must be fresh; the time during which the eggs are boiled must be uniform, as must also the degree of fineness to which the coagulated albumin is reduced, the proportion of albumin and acidulated water used, the degree of acidity of the acidulated water, the temperature at which digestion is carried on, the time required to effect solution of the albumin, and the agitation of the mixture during digestion. It will be serviceable to take a sample of the best pepsin obtainable as a standard, and compare any pepsin under examination with it, so as to ascertain how much of any pepsin is required to produce the same results with the same amount of albumin, fluid and acid, with the same degree of heat, during the same period of digestion, and with the same amount of agitation. Fresh eggs are placed in cold water, heat applied until the water boils and the eggs kept in the boiling water for fifteen minutes. They are then taken out, plunged in cold water to cool, the coagulated white of egg then separated from the yolk, and rubbed and squeezed through a sieve of thirty meshes to the square inch. Two hundred grains of this finely divided albumin are triturated in a mortar with distilled water, containing 5 minims of strong hydrochloric acid to the ounce. When well triturated the mixture is put in a widemouth bottle and sufficient acidulated water added to make the whole measure 2 fluidounces. One-tenth of a grain of the pepsin under examination is then added, and the whole digested for four hours at a temperature of 104° F., shaking the bottle every ten minutes. The

pepsin is best mixed with four times its weight of sugar of milk, and a proportionate quantity of this mixture used. When of good quality one-tenth of a grain of pepsin will dissolve the whole of the 200 grains of albumin. It is best to make comparative experiment with a standard pepsin of great and known strength, and also with a flask containing the same amount of albumin and acidulated water, but no pepsin. Should the pepsin under examination not dissolve all the albumin, comparison with the flask containing no pepsin will show approximately how much has been dissolved, and help to indicate how much more pepsin to use in a second experiment, to dissolve all the albumin, so as to effect perfect solution.

Should it be necessary to ascertain how much peptone and how much syntonin are formed during the digestion, the mixture should be boiled, to destroy any further action of the pepsin. The solution is then filtered from any undissolved albumin, and the filtered solution, while still warm, neutralized with sodium carbonate, when syntonin will be thrown down. The difference between the syntonin and undissolved albumin, and the original amount of albumin used in the experiment, will give the amount of real peptone formed during the process of digestion.

SOME LOCAL INDIGENOUS PLANTS OF MEDICAL INTEREST.

By Joseph Crawford, Ph.G.

Read before the Philadelphia College of Pharmacy at the Pharmaceutical Meeting, Feb. 21.
[See also January number, p. 42-50.]

Our next field of medicinal plants will show us those of the gamopetalous division, *i. e.*, those having the corolla or most attractive portion of the flower composed of parts almost or entirely united. The first one to greet us in our new field will be *Sambucus canadensis*, or common elder. Its bushy and symmetrical growth, large pinnate opposite leaves, handsome white flowers terminating the stems and abundant good fruit, make it quite a conspicuous object throughout the season, along many a fence row; and some authorities go so far as to say that our elder is almost a pharmacy of itself, nearly every portion having been used for some trouble or other in domestic practice. Regular practitioners restrict the use of it very materially nowadays.

Our next genus is likely to have a representative also along the fence, *Viburnum prunifolium*, or the sheep-berry of our youthful days. For those who may have forgotten it, we give you this inadequate word picture somehow as we recall it: A shrub or dwarf tree seldom over 15 feet in this latitude, very erect or strict trunk, but body of shrub is heavily branched in every direction, making an impenetrable head of twigs but of graceful outline. If you can

imagine such an arrangement of branches densely covered with leaves as a background and the large and numerous flattish collections of white flowers as the principal features of the picture, you could have some idea of the beauty and grace of the little tree in flower. Several other species are near us, however of no medicinal significance as far as we know; but, in *Triosteum perfoliatum*, or fever root, we have a plant which as a drug dates its history from the aborigines, though now fallen from general use.

In the order Rubiaceæ we have as a modest starter the little *Mitchella repens*, partridge berry, a prostrate running plant, abundant everywhere in woods, forming dense mats of large areas. Its little white twin flowers are suggestive of the trailing arbutus, to lovers of that delicate little plant, but are rather fainter in odor. The bright red berries are very prominent during the winter, nestling among the dark evergreen leaves of the plant. *Cephalanthus occidentalis*, or button bush, is an undershrub found along water-courses and reminds one of a miniature button ball or sycamore tree, principally by its flower heads.

Galium Aparine, Cleavers, reminds us sharply that it is not to be passed by so hurriedly by our bringing up suddenly against some of its prickles going in opposite direction. This weak, straggling plant depends entirely upon its strong prickles for an upright existence, which it seldom reaches; it is common in moist thickets.

Next we espy, in late summer especially, the largest natural order we have to deal with in systematic botany, the Compositæ, forming as it does $\frac{1}{10}$ of all known spermaphytes or phænogamous plants, and $\frac{1}{8}$ of North American plants. As a beginner we have the little family of Eupatoriums. In the moist portions of the field *Eupatorium perfoliatum* and its "*purpureum*" brother, Joe-Pye-weed. The first named has always been synonymous with the mere mention of Materia Medica about this College, and does seem a trifle bulky for the tongue, but after a little analysis of its terms the idea of the name is simplified materially, and the same holds good of the other species we have in the vicinity. *E. purpureum* is so called from the purplish stem and panicle of flowers; *E. aromaticum* from its pleasant odor; *E. hyssopifolium* has hyssop-like leaves; *E. rotundifolium* is round-leaved; *E. sessilifolium* has the leaves placed directly on stem; *E. ageratoides* is like garden ageratum. They are all handsome plants and easy of study for belonging to what is considered a very hard order.

Liatris spicata, blazing star, outrivals the eupatorium tribe for arrangement of growth and beauty of flowers, which, as indicated by its specific name, are in a very long spike. This is more common in Jersey than in Pennsylvania and is much sought for among nurserymen.

Out of the 40 or more species of Solidago in Eastern United States we have but one or two that have been used whatever in medicine; *S. odora*, the chief of these, is one of the earliest to bloom in the fall, and is recognized by its leaves giving out an agreeable odor like anise when they are bruised. The Solidagos are beautiful in flower and tend much toward making autumn the golden season of the year.

Everlasting, *Gnaphalium polycephalum*, is another field representative of this great order, but is used chiefly in brewing domestic troubles or ales. *Inula Helenium*, elecampane, an European species, is established here princi-

pally as an escape from gardens. *Polymnia Uvedalia*, bear's foot, is a rough-looking and coarse plant, 3–10 foot high, large leaves shaped somewhat like a bear's foot, fleur-de-lis, tongue and dart or almost anything else your fancy could picture.

This and the *P. canadensis* are uncommon in this immediate section.

With the accession of *Ambrosia artemisiæfoliæ* to our category of useful plants, we can hope to hear as much good from our friends the asters.

These are the most abundant fall plants we have, unless it be the Solidagos. They frequent all places, from airiest and highest mountain to sands of seashore, and until some one cares to use them they must remain weeds. But the *Ambrosia artemisiæfolia* and *A. trifida* are appearing to be of some service in this world of disease, and we trust so in order that they may retrieve their good name, for the application of the generic name from the food of the gods was decidedly inappropriate.

The clotburs, *Xanthium strumarium* and *spinosum*, are not natives, but one would suppose so from the frequence of the former along our roadways. They are not at all clannish for foreigners, but adhere to the material or neighbor next to them.

Rudbeckia laciniata, cone flower, is a tall annual plant found along streams and marshy places and claims little merit either for beauty of growth or wealth of constituents. The sunflower, *Helianthus annuus*, is too well known to describe. Swampy regions send us a disagreeable fellow to part with after passing through his locality, *Bidens bipinnata*, or Spanish needles, also too common to mention further. The following foreign plants, now appearing here plentifully, may be noted as possessing medical virtues: *Anthemis nobilis*, or Roman chamomile; *Chrysanthemum Leucanthemum*, ox-eye daisy of the fields and street side, for the florists have found it valuable in their line; *Chrysanthemum Parthenium*, or feverfew; *Tanacetum vulgare* from the road-sides; *Tussilago Farfara*, or coltsfoot, from ballast grounds; *Arctium Lappa*, or burdock and its varieties; *Cichorium Intybus*, or chicory; *Taraxacum officinale*, our common dandelion; *Artemisia vulgaris*, or mugwort; *A. Absinthium*, *A. Abrotanum*, old man or old woman as the case may be; *Senecio aureus*, or golden ragwort, is a common plant about here in spring and is rendered quite attractive by its bright golden flowers.

Erechtites hieracifolia, fireweed, is a very common plant about dwellings, and especially so in clearings, and is likely to play an important part in Materia Medica of the future; it would be pleasing to see this labelled "A useful Weed."

Erigeron canadense yields an oil that is officinal, but the whole plant was used by the aborigines and found beneficial. Two other species are common with us, *E. annuus* and *E. Philadelphicus*. *Achillea Millefolium*, yarrow, is another plant very common, but of great service in domestic arts. Lion's foot, *Prenanthes Serpentaria*, is abundant in woods, and also commonly called rattlesnake root, it being reputed as an antidote for rattlesnake bite. On this subject a gentleman having searched the domestic literature of medicinal plants wonders how the bite ever had a chance to prove fatal, judging by remedies recommended as cures. We would suggest 'tis only when whiskey, that extremely subtle fluid Jersey lightning, is absent.

Lactuca canadensis is a common plant to all situations, and noteworthy as

a possible source of lactucarium; another species yielding it is the European *L. Scariola*, which is fast becoming naturalized by aid of railroad ballasting.

We have given a brief résumé of this large and important order, and trust you will not feel offended if any of your friends in the sunflower family have not received special mention; but we would recommend as a palliative to any possible injury, a railroad ride across New Jersey, notably along the Delaware shore, where in the proper season, autumn, the Compositæ are in their golden glory.

Nowhere, as yet, in all our travels, have we met with such a magnificence of bloom, in this order, as there is represented along this route. You literally travel through acres of golden yellow flowers, limited only by woods or cultivated fields on the one side and the terminals of the road in length.

The Lobeliaceæ are represented in most places by two fine plants; one whose cardinal virtue at present is its color, *Lobelia cardinalis* or cardinal flower, and *L. syphilitica*, which resembles the former very much, except that the flowers are blue and arranged in a thicker spike. The cardinal is the most conspicuous of our lobelias; its long red spikes of bloom are as near the cardinal color as has yet been found in nature. The two mentioned, with *L. puberula*, are the largest species we have, ranging from 2 to 3 feet in height; but it is reserved for a smaller and less conspicuous one to keep up the business end of the family; or, in fact, to bring up before the world all disagreeable material in a business-like manner. *Lobelia inflata*, or Indian tobacco, is very common in fields, easily recognized and not likely to be confounded with other plants.

Of Ericaceæ, the trailing arbutus, *Epigæa repens*, is common to both States, New Jersey and Pennsylvania. Who of us has a soul so cold or a scent so small that he can say he finds no beauty in this modest little forester? *Gaultheria procumbens*, or teaberry, claims a little supremacy in size over the arbutus, being an erect plant, 3–5 inches high, and more abundant in New Jersey than here. *Oxydendron arboreum*, sour wood, has been suggested for the list of new remedies. Near here the only known specimen tree, for such it is, is in Bartram's Garden, but the Alleghenies are a home for it.

The so-called laurels, *Kalmia latifolia* and *K. angustifolia*, we have in profusion; they form beautiful objects during their blooming season, and by reason of their growth excellent coverts for game, but are most annoying to the pedestrian seeking to get through them. Pipsissewa, *Chimaphila umbellata*, and its brother, *C. maculata*, are abundant in nearly all woods. *Monotropa uniflora* deserves mention as a remedy and also as a curious plant growth. It is a parasite, small, leafless, with a simple stem, 3–8 inches high, and a large nodding flower terminating the stem. The whole plant is waxy white, and remains so until the production of seed begins, when it changes to black and soon becomes entirely changed in color; it grows in clusters in woods, and is apt to be mistaken for a fungus by those not instructed. The term ice plant has been applied to it, also nest plant, or bird's nest, ova ova, fit root, Indian pipe or pipe plant, as it resembles a pipe, and also corpse plant, from its lividness.

The species *M. Hypopytis* is taller, pubescent, dull yellowish-brown, has numerous flowers, and the whole plant is pleasantly scented, which odor does not diminish by drying.

The Primrose Family sends us the poor man's weather glass from Europe to

aid us in our curative processes; *Anagallis arvensis* is a small annual now scattered in our fields. The common name is derived from its act of shutting up shop on approach of rainy weather.

Fraxinus Americanus is a most abundant ash, as you meet it frequently along fences or in rather open woods, and recognized at a glance by its peculiarly shaped fruit. Another member of the order Oleaceæ in this latitude is the Fringe Tree, or *Chionanthus Virginica*. It is of great beauty during flowering season, made conspicuous by its long and drooping panicles of delicate white flowers. For this reason it is highly prized by horticulturists. *Ligustrum vulgare*, or privet, belongs to this order, and has adapted itself to our country.

Apocynum androsæmifolium and *A. cannabinum*, dogbane and Canadian hemp respectively, appear in moist meadows and deserted fields quite abundantly.. A chief characteristic of them is the fruit arranged in pairs of slender follicles, 3 or 4 in. long.

The order Asclepiadaceæ, which is closely connected to the preceding, yields the butterfly weed, *Asclepias tuberosa*, or pleurisy root, common in sterile soils, particularly in New Jersey, the lower portion of which is pretty well covered with it. The rich orange of its flowers makes it a very conspicuous plant, quite attractive and valuable for lawn decorations. Dr. Barton said of this plant "that it was one of the most important of our indigenous remedies." The common milkweed, *Asclepias Cornuti*, is a larger plant, more robust, with flesh-colored or whitish flowers, and very common in waste places. A few weeks ago a specimen root was sent us by an importing house, as a sample of elecampane. It was utterly unlike inula, but the characters were so few that identification was accordingly difficult, and before arriving at a determination word was received from the collectors that it was not Inula at all but milkweed, *Asclepias Cornuti*, and pulled too soon. Needless to say we reached the same conclusion respecting their education in some things essential. The whole order is of great interest to the botanical student, however, as furnishing fine examples of cross-fertilization, and for the benefit of the student we will mention the other species found in nearby localities as it is likely they are as important therapeutically as the species mentioned above: *Asclepias paupercula*, at Cape May; *A. rubra*, scattered in New Jersey; *A. purpurascens*, also remotely in the state; *A. incarnata* is very tame, encroaching, in moist situations, to our very doors, and its variety *pulchra* is filling up some of the swamps of adjoining state to the East, while its neighbor, *A. obtusifolia*, occupies the very dry portion; *A. variegata*, *A. phytolaccoides*, *A. quadrifolia*, and *A. verticillata* are all beautiful plants more or less common to our own state. Thus we have 11 species known to Eastern United States at our doors.

Spigelia Marilandica in the order Loganiaceæ is reported from southern portion of New Jersey, but we have never met with it. But the Gentianaceæ are represented by handsome Sabbatias and Gentians that to a mild degree replace the required ones of the stores. *Sabbatia lanceolata*, *S. angularis*, *S. stellaris* and *S. gracilis* are the ones most frequently met with and are magnificent specimens of that genus, the two last being found in brackish marshes along the Jersey coast and noticeable among the sedges at once by their star-shaped pink flowers.

Among the Gentians the *G. angustifolia*, of pine barrens, is the largest

flowering and smallest plant of the genus we have here and its deep blue beauty is only approached by *G. crinita* or fringed gentian, which is found in remote situations in both states. *G. Andrewsii*, or closed gentian, is not only a beautiful plant but one very trying to the patience of the novice in botany when he undertakes to await the opening of the flower for purpose of analysis. As he is about abandoning the idea, a bee comes along and enters the flower without any hesitation whatever, proving that it has been open for days and only for such meddlers as belong to the bee tribe. To others it is quite exclusive.

Polemonium reptans, order Polemoniaceæ, is found within the city limits abundantly near watercourses, a very graceful plant of low growth and handsome light blue flowers in early spring. *Hydrophyllum Virginicum*, order Hydrophyllaceæ, is found in company with above and is noted as a remedial agent.

The order Boraginaceæ has no native representatives of importance in Materia Medica. Though we have good authority that the Indians made use of several genera to aid them in relieving distress, notably, lungwort, *Mertensia virginica*, and puccoon, *Lithospermum canescens*. We have the introduced species *Symphytum officinale*, comfrey, and *Cynoglossum officinale* or hound's tongue, chiefly found about gardens and roadsides. An order for hound's tongue caused some confusion in this city some months ago; rib grass, *Plantago lanceolata*, had been sent under label of hound's tongue and the party persisted that they were right, but would give no authority, while we had for ours any manual of plants published in this country. Cynoglossum was the desired article, and the consumer wanted it in green condition; we sent him the plant.

Ipomœa pandurata, man-of-the-earth, order Convolvulaceæ, is a common native and a troublesome weed to many farmers by its extensive running vines and its monstrous root stocks, which often weigh upwards of 20 pounds. As it has been put upon our list for medicinal purposes, why should it lack investigation when so much material is at hand?

From the order Solanaceæ, we have *Solanum Dulcamara* in many places and *Solanum Carolinense*, a rough species, prickly in fact, found in sandy and waste places. *Hyoscyamus niger* has been found in this country on ballast grounds only. *Datura Stramonium*, or jimson weed, is another foreigner of great value to us in Materia Medica and found without much trouble even here in the City Parks (!).

In the order Scrophulariaceæ we have two genera represented by European plants that have become weeds here now, *Verbascum Thapsus*, or mullein, a familiar family medicine, and *Linaria vulgaris*, or toadflax, which is restricted to certain schools of medicine. The toadflax is a beautiful plant and flower, and would rank well among our ornamental plants, for which purpose it was sent many years ago to this city, but listen to what John Bartram says of it in Troublesome Plants: "The most mischievous of these is the stinking yellow Linaria. It is the most hurtful plant to our pastures that can grow in our northern climate. Neither the spade, plough nor hoe can eradicate it when it is spread in pasture, ... and the cattle can't abide it." This redeeming feature it has though, as a fine illustration for study of morphology.

Figwort, *Scrophularia nodosa*, Gray's variety Marilandica, is a rank plant, 4 or 5 feet high, growing in moist, shady places, very common in this state; also interesting in morphology. *Chelone glabra* is another scrophulariacea found

in wet places, and its large white flowers are very suggestive of the common name, turtle head. The old Leptandra, now again called *Veronica Virginica*, is not well distributed but abundant in its localities; it bears little resemblance to true veronicas, being very tall, leaves arranged in whorls and many spikes of flowers furnished with long stamens enclosed by a short, tubular corolla, while veronicas proper have usually small, short stamens, and spreading corolla. *V. officinalis* is about the only other native of which we have any preparation. In this order we have several genera that have been proven parasitic by roots, and in this connection Gerardia, Buchnera, Schwalbea and Castilleia, are worthy of closer investigation.

Among the parasitic orobanchaceæ the beechdrops or cancer root (*Epiphegus Virginiana*) is suggestive of real worth, with little substantiation, but as a root parasite it is a success. Three other genera are found in these limits, of which two are native, namely: *Conopholis*, on roots of trees forming large masses of flowering stems, and *Aphyllon*, also on trees, but with only one or two single flowered stems. The introduced one is *Orobanche*, found principally on clover roots or fields, though we have found one growing on the roots of common house geranium.

Of the order Bignoniaceæ, *Catalpa bignonioides* is used to a limited extent in medicine, but is more valuable as an ornamental tree.

Verbena hastata and *V. urticæfolia*, of the order Verbenaceæ, are noticeable as having some medicinal virtues and also as frequent wayside weeds of little notice except for the deep blue flowers of the first species. The leaves are usually covered with a whitish substance that renders them interesting to the student of lower forms of vegetation, but unsightly to casual observers of nature.

The order Labiatæ ranks well in number of genera and species with other large orders, while for odor it stands among the first.

The first we call your attention to are pepper- and spear-mint, *Mentha piperita* and *M. viridis*. They are common along water-courses, and easily distinguished after a little comparison. *Collinsonia canadensis*, or horse balm, is a large coarse plant, with peculiar yellow flowers in a very loose panicle, which serves to diffuse the odor which some people claim to be lemon-like. *Lycopus virginicus*, bugle weed, is abundant along ditches, unattractive, and has an odor peculiar to water plants. *Cunila mariana*, or dittany, is a favorite herb among the country folks, for all sorts of teas. It is truly a dry woods plant, and its neatly arranged purplish blossoms are very attractive to all people. The odor is pleasantly camphoraceous.

Origanum vulgare and *Melissa officinalis* are found in scattered locations. For *Hedeoma pulegioides*, or pennyroyal, we must hunt in the dry fields, and even then look closely to keep out its counterpart, *Isanthus cæruleus*, which it closely resembles except in the degree of odor.

The monardas were undoubtedly called horse mints on account of their "strong" odor, which, however, is not disagreeable in any of the species, but just intense.

M. punctata is fondest of Jersey sands, and it is a relief for the eye to meet a clump of this in bloom. *Nepeta Cataria*, catnip, and *N. Glechoma*, ground ivy, are not native, but are abundant and useful. The same may be said of horehound, *Marrubium vulgare* and of *Leonurus cardiaca*, motherwort, the useful-

ness of horehound certainly not being questioned. To this order also belongs a plant nearly forgotten, that only some years ago enjoyed quite an empirical distinction, as mad dog skull cap, *Scutellaria lateriflora;* whether or not it has outlived its usefulness for the mad dog, we know not, but dogs seem better bred now than formerly, with less to excite their ire.

Plantago major, the large leaf or common plantain, and its twin brother, *P. Rugelii*, also *P. lanceolata* or rib grass, belong to the order Plantaginaceæ. The first two species are closely related, but the lance leaf is easily recognized. This species is the one that figured as a substitute for hound's tongue and lately we have samples from an importing house of cumin seeds which proved to be from this species of plantain, but we have never heard any explanation made for the substitution.

The chenopodiums are very disagreeable to handle. The medicinal ones are introduced species and our natives are seldom applied; but in *Phytolacca decandra* we have the solitary species of the only genus of its order in this section. A robust plant, fond of clearings, the young shoots are excellent in spring as a substitute for asparagus; later in season the roots are large enough for all remedial purposes to which they may be applied. Their use has been sanctioned by most schools of medicine.

Yellow dock, *Rumex crispus*, order Polygonaceæ, and bitter dock, *R. obtusifolius*, are not native to the country, but are used very frequently and are found in most sections throughout the country. From the genus Polygonum we have *P. acre*, *P. aviculare* and *P. hydropiper* or smartweed, claiming properties worthy of consideration.

With the order Aristolochiaceæ we introduce two plants which are very interesting as well as curious: *Asarum Canadense*, or wild ginger, and *Aristolochia Serpentaria* or Virginia snake root. The former is found abundantly in this neighborhood in springtime and its large brownish-red or reddish-brown flowers are seldom seen above ground but just hidden under fallen leaves. The leaves are large, glossy, and resemble a colt's foot in outlines. Serpentaria prefers woodlands and is seldom in profusion. Its place in Materia Medica is now usurped nearly entirely by *A. reticulata* from the S. W. States. *Aristolochia clematitis* is an European species found in Bartram's Garden, most likely sent here by one of the correspondents of Bartram.

Sassafras officinale and *Lindera Benzoin*, or spice bush, are well-known forms of order Lauraceæ. Surely should we turn back a few day pages in our life book we would find the odor of the Sassafras and spice bush as agreeable now as in the days of our youth.

Phoradendron flavescens in the order Loranthaceæ is a parasite, our mistletoe, growing in this locality upon blue gum trees in New Jersey. It has no connection with the soil but derives its sustenance from the branches of trees. It has little narrow leaves, small flowers and waxy-looking fruit that is very attractive for decoration during the holiday season.

The genus Euphorbia, in that valuable order Euphorbiaceæ, has many species that are abundant here, though few of them receive any special notice.

Euphorbia hypericifolia is an inconspicuous plant, nearly a weed in fields. *E. Ipecacuanhæ* is a native of New Jersey and is very common in the sandy section of that state; when in bloom, the little nearly prostrate plants resemble bright red and other shades of coral. The root, however, is seldom obtained

in its entirety; it is very large, numerous and long, and seems to extend in almost a perpendicular manner towards the earth's centre, as they never return nor twist in any other direction.

In the order Urticaceæ we have commonly around us by river sides, the *Celtis occidentalis* or hackberry, and *Ulmus fulva* or slippery elm, both trees of medium size. The latter is pretty quickly noticed by boys. The former resembles it in general appearance, but has a characteristic rough bark that cannot be mistaken. We have also on our waste places a good American representative of the foreign hemp, and we call it *Cannabis sativa*, variety *Americana*. It resembles the species, though we think the seeds of our plant are larger and the markings darker and larger. The numerous digitate leaves, slightly drooping, give a very graceful appearance to the tall plant. *Humulus Lupulus*, the hop, is supposed to be growing native along the lower Susquehanna. *Urtica dioica*, the nettle, always gives an unpleasant welcome or rather rebukes smartly the passerby, hence we will let them remain as they grew, in neglected places.

Another tree order is that of Juglandaceæ, and the principals are *Juglans cinerea* of Linné, and *J. cathartica* of Micheaux, the butternut or white walnut, which yields an active drug for us, and *Carya alba* or shell-bark hickory one for the Hahnemann School. The butternut resembles the black walnut, but its bark is smoother and with leaves lighter green and fruit very clammy instead of smooth and oblong against the round ones of the nigra.

The shell-bark hickory is well known to boys and who don't forget it when they become men.

Myrica cerifera, wax myrtle, and *Comptonia asplenifolia* are shrubby plants of the order Myricaceæ, very strongly aromatic of leaves and fruit, the comptonia very pleasantly so; hence its common name, "sweet fern." The wax myrtle has its fruit covered with a wax-like incrustation. Both plants are abundant, particularly in New Jersey.

Betula lenta or sweet birch is another of the hillside friends of our youth; by that, we mean, by way of explanation, the appreciation of its spicy bark, and not the application of its virgate bunches to the back; but, we know full well all about birch oil.

Alnus serrulata, swamp alder, and *Fagus ferruginea*, the beech, are also useful in medicine to some extent and also very common. The *oaks* are as noble as ever and as useful. *Quercus alba*, white oak, *Q. rubra*, red oak, and *Q. tinctoria* of Bartram, furnish us with all the oak bark we can use; they are also some of our grandest specimens of forest trees. Cowper says: "Lord of the woods, the long surviving oak."

Castanea vesca var. *Americana* is the well-known chestnut tree. This, unlike the oak, prefers colonies of its own to appearing by itself in remote places.

Our next and last order for the present is Salicaceæ, consisting of two genera, Salix and Populus, the latter furnishing us balm of Gilead buds from *Populus balsamifera*, and the former salicin, from almost any willow you may use.

MINUTES OF THE PHARMACEUTICAL MEETING.

PHILADELPHIA, February 21, 1893.

On motion of Dr. Lowe Mr. Wm. McIntyre was called to preside, and the reading of the minutes of the last meeting was dispensed with.

Prof. Sadtler spoke of the chemical interest involved in *sodium peroxide.* Chlorine bleaching has been for a long time regarded as the most efficient of all processes for this purpose; but its disadvantages are that in animal and vegetable fibre the texture is much injured; the same objection applies to sulphur dioxide as the acid generated is deposited in the fibre and destroys it. *Barium peroxide* and *hydrogen peroxide,* both possess the advantage of yielding nascent oxygen, which destroys the color and leaves water only as its residuum. *Sodium peroxide* was prepared as long ago as 1815 by Gay Lussac, but its practical use has been brought about by H. Carrington Bolton, an American chemist. This has been rendered possible by the reduction of the price of metallic sodium. It is a yellowish-white granular powder, very hygroscopic, and gives twenty per cent. available oxygen. There are two ways of using it, either in making peroxide of hydrogen or peroxide of magnesium, and this latter substance is quite stable and devoid of injurious action on fibres either of silk or wool. The decomposition of twelve ounces of sodium peroxide with a quantity of weak acid produces a preparation equal in efficiency to one gallon of ten per cent. hydrogen peroxide. It is necessary that the solution be made in vats of wood, glass or earthenware, as metallic containers exert a baneful influence on the mixture. It can be used as a bleacher of tussa silk, a cheap kind of silk fibre, and consequently a troublesome one to work; in dentistry it has been found useful in bleaching discolored dentin.

G. M. Beringer, Ph.G., read a paper by Mr. Jos. Crawford, on some local medicinal plants, in continuation of the one read in December last, and the paper was illustrated by a large nnmber of beautifully prepared specimens of the plants described.

Mr. F. W. Meink, a member of the present senior class, read a paper upon *Dioscorea Batatas* or Chinese potato; the investigation was made at the suggestion of Professor Maisch.

An inquiry was made as to the uses of *Cynoglossum officinale.* The reply was that it was used by a pharmacist as a hair restorer, but that several months use showed no advantage.

Prof. Trimble exhibited a very beautiful sample of *milk sugar.* It was the product of some of the Chester County creameries consuming from 25,000 to 45,000 pounds of milk per diem. Parties have been trying for years to make sugar of milk, but had failed; when the chemists who had been employed at the Spreckels sugar refinery ceased their connection with that concern, they began experimenting with milk sugar and the best methods of decolorization. The manufacturers expect to make a ton to a ton and a half per day—the largest consumers of milk sugar are those who make infant foods, and next to them are the homœopathic pharmacists. The Fairmount Creamery is the company operating this manufacture, and is the largest in this part of the state. The milk sugar will be in the hands of Messrs. Warrington & Pennypacker, of this city.

Dr. Lowe made some remarks upon an *imitation coffee*, composed of coffee, clay and bean fecula, made into the form of coffee beans. Mr. Perot said that he had seen the process and that the ingredients consisted largely of chicory, molasses and flour; some of the stuff was said to contain one-third coffee.

On motion the papers were referred to the publication committee, and the meeting then adjourned. T. S. WIEGAND, *Registrar.*

EDITORIAL.

The formal opening of the new buildings of the Philadelphia College of Pharmacy took place on the evening of February 22, in the museum hall, which for the occasion was tastefully decorated with plants, flowers, flags and bunting. The large hall was well filled with an audience of members, graduates and friends of the College, and of representatives of sister institutions, and the enjoyment of the occasion was enhanced by choice orchestral music. After prayer had been offered by the Rev. Geo. Rees, pastor of the Baptist Tabernacle Church, the chairman of the Building Committee, Howard B. French, made a short address of welcome, and then introduced the orator of the evening, Professor Remington, whose address, historical as well as descriptive, will be found in the present number, and the descriptive portion of which will be further explained by reference to the illustrations of the College buildings, accompanying this number.

Dr. Horatio C. Wood, professor of materia medica and therapeutics in the University of Pennsylvania, made an address in which he spoke of the importance of materia medica as a branch of both medical and pharmaceutical education, dwelling also upon the relation of the pharmacist to the physician. The concluding address was made by Mr. J. H. Redsecker, of Lebanon, Pa., who referred to the progress made by pharmacy and in the education of the young pharmacist.

Mr. French, as chairman of the Building Committee, then formally turned over the new buildings to the president of the College, Charles Bullock, who in accepting them on behalf of the institution referred in terms of high praise to the labor performed and the great services rendered by the chairman of the Committee. The latter was about to close the exercises when Jas. T. Shinn stepped forward, and as a member of the building committee claimed the attention of the audience for a short time, while he again alluded to the indefatigable services rendered by the chairman, presenting him at the conclusion of his remarks with a solid silver loving cup and plate, bearing the following inscription:

February 22, 1893.
Presented to
Howard B. French
by his fellow-members of the
Philadelphia College of Pharmacy
as a token of their appreciation of his
zeal and devotion as Chairman of
the Committee in charge of the erection
of the new buildings in the year
1892.

Mr. French was completely taken by surprise at this turn of the exercises, which, after having expressed his thanks, were then closed, to afford the audience the opportunity of inspecting the buildings, all parts of which were thrown open and made accessible to the visitors. Among the displays arranged in the different halls should be mentioned the microscopic exhibition made by the students of the microscopical laboratory, under the supervision of the director, G. M. Beringer. Signal service was rendered during the entire evening by members of the Zeta Phi Society, who acted as ushers, and as guides to the visitors through the buildings.

The amendment to the Pennsylvania Pharmacy Law, referred to in our last number, p. 105, has finally passed the House of Representatives, February 14, by a vote of 152 yeas to 16 nays. On February 16, it reached second reading in the Senate and passed that ordeal successfully. From information received since then there appears to be no question now about its final passage.

OBITUARY.

Frederic Augustus Genth died in Philadelphia, February 3, at the age of 73 years. He was born in the town of Waechtersbach, Germany, in 1820, received his classical education in Hanau, and subsequently studied chemistry, mineralogy and geology at the universities of Heidelberg, Marburg and Giessen, in the last two institutions working in the laboratories of Bunsen and Liebig. While at Marburg he was for several years assistant to Bunsen, and after receiving the degree of doctor of philosophy he located at the same institution as private lecturer. He came to the United States in 1847, and soon afterward located in Philadelphia as analytical chemist, acquiring a wide reputation, which caused him to be called upon as expert, in many cases involving forensic questions in mining interests, and in cases of poisoning. In 1872 he was called to the chair of chemistry and mineralogy in the University of Pennsylvania, which position he held until 1888. In 1880, Dr. Genth was elected president of the American Chemical Society, of which he was a member since its foundation in April, 1876. Together with Prof. Wolcott Gibbs, he instituted researches on the cobalt ammonium bases, the results of which were published in Silliman's Journal, in which also a large number of Genth's investigations in chemistry, mineralogy and geology appeared, others having been published in the Proceedings of the American Philosophical Society, in the Contributions from the Laboratory of the University of Pennsylvania, etc. During the severe cold weather near the beginning of the year, the germs of pulmonary disease rapidly developed, which terminated his useful life, as a teacher of chemistry, both private and at the University, and as an investigator in science.

Jacob D. Wells, a prominent pharmacist of Cincinnati, died in that city February 18, aged 57 years. He was born near Marion, O., and received his first education in the country school. At the age of fourteen he came to Cincinnati as an apprentice to the drug business. His earnings were partly invested in gaining a better education at College Hill, and in 1859 he opened business for himself, which he conducted in the same vicinity until the time of his death. Mr. Wells took great interest in the advancement of pharmacy, and was a member and for some time president of the Cincinnati College of Pharmacy, and member of the Ohio and of the American Pharmaceutical Associations, of the latter also one of its vice-presidents. As a man of sterling integrity he was called to various public offices, and while chairman of the finance committee of Councils he was known as the watch-dog of the city treasury. Since the death of his wife, a few months after the Cincinnati meeting of the National Association in 1887, his health has been on the wane, and since May last he was a sufferer of chronic bronchitis. Two sons and two daughters survive him.